

SOURCE: USGS NATIONAL MAPPER, DATE RETRIEVED 8/3/2025

LOCATION MAP
SCALE: 1" = 500'±

SITE DEVELOPMENT PLANS FOR MUG & JUG PROPOSED COMMERCIAL REDEVELOPMENT

PARCEL IDS: 2507355039, 2507355038, & 2507355040
4162 TWELVE MILE ROAD
CITY OF BERKLEY, OAKLAND COUNTY, MICHIGAN

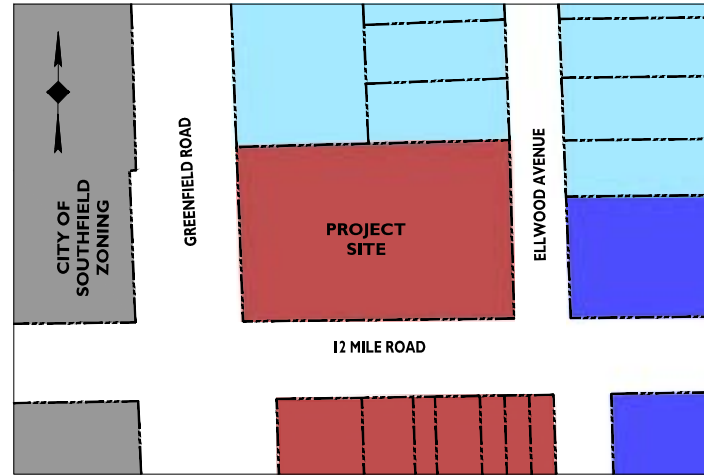
APPLICANT

SELWAN SHINA
4474 ORCHARD LAKE ROAD, SUITE A
WEST BLOOMFIELD, MI, 48322
248.207.3110
RSHINA@BAYSFD.COM



SOURCE: NEARMAPS, DATE RETRIEVED 1/3/2025

AERIAL MAP
SCALE: 1" = 50'±



SOURCE: CITY OF BERKLEY ZONING MAP, DATE RETRIEVED 01/06/2025

ZONING MAP
SCALE: 1" = 50'±

■ GATEWAY DISTRICT
■ TWELVE MILE DISTRICT
■ GREENFIELD DISTRICT

PLANS PREPARED BY:



Birmingham, MI · New York, NY · Salem, MA
Princeton, NJ · Tampa, FL · Rutherford, NJ
www.stonefieldeng.com

555 S. Old Woodward Avenue, Suite 12L, Birmingham, MI 48009
Phone 248.247.1115

A MBS DIG TICKET WAS REQUESTED PRIOR TO CONDUCTING A SURVEY FOR THE SUBJECT PROPERTY.
TICKET NO: 2024091800753



Know what's below
Call before you dig.

PLAN REFERENCE MATERIALS:

- THIS PLAN SET REFERENCES THE FOLLOWING DOCUMENTS INCLUDING, BUT NOT LIMITED TO:
 - ALTA/NSPS LAND TITLE SURVEY PREPARED BY STONEFIELD ENGINEERING & DESIGN, LLC. DATED 10/10/2024
 - ARCHITECTURAL PLANS PREPARED BY ADG DESIGN STUDIO
 - AERIAL MAP FROM NEARMAPS, DATE RETRIEVED 1/3/2025
 - LOCATION MAP FROM USGS TOPOGRAPHICAL MAPPER, DATE RETRIEVED 1/3/2025
- ALL REFERENCE MATERIAL LISTED ABOVE SHALL BE CONSIDERED A PART OF THIS PLAN SET AND ALL INFORMATION CONTAINED WITHIN THESE MATERIALS SHALL BE UTILIZED IN CONJUNCTION WITH THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN A COPY OF EACH REFERENCE AND REVIEW IT THOROUGHLY PRIOR TO THE START OF CONSTRUCTION.

SHEET INDEX

DRAWING TITLE	SHEET #
COVER SHEET	C-1
DEMOLITION PLAN	C-2
SITE PLAN	C-3
GRADING PLAN	C-4
STORMWATER MANAGEMENT PLAN	C-5
UTILITY PLAN	C-6
LIGHTING PLAN	C-7
LANDSCAPING PLAN	C-8
LANDSCAPING DETAILS	C-9
CONSTRUCTION DETAILS	C-10 & C-11

ADDITIONAL SHEETS

DRAWING TITLE	SHEET #
ALTA/NSPS LAND TITLE SURVEY	1 OF 1
LIFE SAFETY AND EGRESS PLAN	A-0.1
ARCHITECTURAL FLOOR PLAN	A-1.1
ARCHITECTURAL ELEVATIONS	A-0.15 & A-2.4
OCVRC SANITARY SEWER DETAILS	1 & 2 OF 2
OCVRC STORM DRAIN DETAILS	1 OF 1

NO.	DATE	ISSUE	DESCRIPTION
1	08/18/2025	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
2	08/18/2025	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
3	08/22/2025	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL

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SITE DEVELOPMENT PLANS
MUG & JUG
PROPOSED COMMERCIAL REDEVELOPMENT

PARCEL IDS: 2507355039, 2507355038, & 2507355040
CITY OF BERKLEY
OAKLAND COUNTY, MICHIGAN



SCALE: AS SHOWN PROJECT ID: DET34304

TITLE:
COVER SHEET

DRAWING:
C-1

C:\Users\selwan\Documents\2025\118\PROJECTS\REDEVELOPMENT\MUG&JUG\DWG

REMOVAL QUANTITIES

CONCRETE	2,927	SF
ASPHALT PAVEMENT	25,062	SF
CONCRETE CURB	231	LF
CONCRETE WHEEL STOP	48	EA
COMBINED SEWER MAIN	303	LF
STORM PIPE	49	LF
STORM STRUCTURE	7	EA
GAS SERVICE	227	LF
GAS METER	4	EA
ELECTRIC METER	1	EA
OVERHEAD LINE	648	LF
UTILITY POLE	1	EA
LIGHT POLE	2	EA
BUILDING	4,401	SF
TRASH ENCLOSURE	2	EA
SKIN	1	EA
BOLLARD	14	EA

SYMBOL	DESCRIPTION
	NATURE TO BE REMOVED / DEMOLISHED
	LIMIT OF DISTURBANCE
	EXISTING CONCRETE TO BE REMOVED
	EXISTING ASPHALT TO BE REMOVED

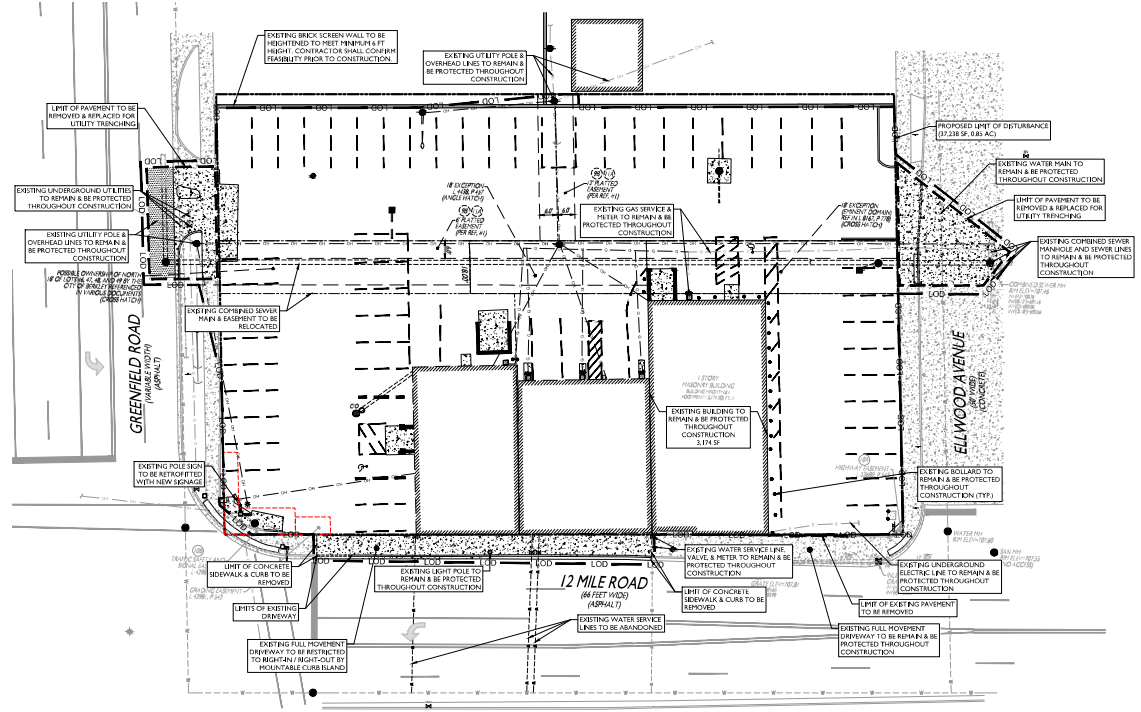
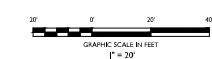
ALL SITE FEATURES WITHIN THE LIMIT OF DISTURBANCE INDICATED ON THIS PLAN ARE TO BE REMOVED / DEMOLISHED UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF SIGNIFICANT DISCREPANCIES ARE DISCERNED BETWEEN THIS PLAN AND FIELD CONDITIONS



Know what's below
Call before you dig.

DEMOLITION NOTES

1. THE WORK SHOWN ON THE DEMOLITION PLAN IS TO PROVIDE GENERAL INFORMATION TOWARDS THE WORKING PARTS TO BE DEMOLISHED AND/OR REMOVED. THE CONTRACTOR IS RESPONSIBLE TO REVIEW THE EXISTING PLAN SET AND ASSOCIATED REPORTS/REFERENCE DOCUMENTS INCLUDING ALL DEMOLITION ACTIVITIES AND INCIDENTAL TASKS NECESSARY TO COMPLETE THE SITE IMPROVEMENTS.
2. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF DEMOLITION ACTIVITIES.
3. EXPLOSIVES SHALL NOT BE USED UNLESS WRITTEN CONSENT FROM BOTH THE OWNER AND ANY APPLICABLE GOVERNING AGENCY IS OBTAINED BEFORE THE START OF ANY EXPLORE PROGRAM. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL LOCAL, STATE, AND FEDERAL PERMITS. ADDITIONALLY, THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL SITE RESTORATION AS REQUIRED AND ANY DAMAGE TO THE ADJACENT PROPERTY AS A RESULT OF THIS DEMOLITION PRACTICES.
4. ALL EMPLOYEES PARTICIPATING SHALL BE TRAINED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL CODES. THE CONTRACTOR IS RESPONSIBLE FOR INSURING ALL UTILITIES ARE DISCONNECTED IN ACCORDANCE WITH THE UTILITY AUTHORITIES' REQUIREMENTS PRIOR TO STARTING THE DEMOLITION OF ANY STRUCTURE. ALL EXCAVATIONS ASSOCIATED WITH DEMOLISHED STRUCTURES OR REMOVED SHIMS SHALL BE BACKFILLED WITH SUFFICIENT MATERIAL AND COMPACTED TO SUPPORT SITE AND BUILDING IMPROVEMENTS. A GEOTECHNICAL ENGINEER SHOULD BE PRESENT DURING BACKFILLING ACTIVITIES TO OBSERVE AND CERTIFY THAT BACKFILL MATERIALS BE COMPACTED TO A SUFFICIENT DENSITY.
5. DEMOLISHED DEBRIS SHALL NOT BE BURIED ON SITE. ALL WASTEWATER GENERATED FROM DEMOLITION ACTIVITIES SHALL BE DEPOSITED OR IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN ALL RECORDS OF THE DISPOSAL TO DEMONSTRATE COMPLIANCE WITH THE ABOVE REGULATIONS.



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3	08/23/2023	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL

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SITE DEVELOPMENT PLANS

MUG & JUG

PROPOSED COMMERCIAL REDEVELOPMENT

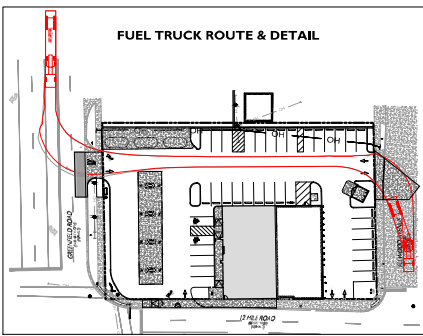
PARCEL ID: 280735809, 280735808, & 280735840
CITY OF BURLY
OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN
Professional Engineer
No. 11517
JAMES M. HUGHES

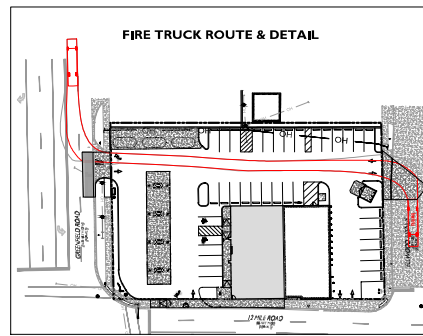
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SCALE: 1" = 20' PROJECT ID: DET-2404
TITLE: DEMOLITION PLAN
DRAWING: C-2

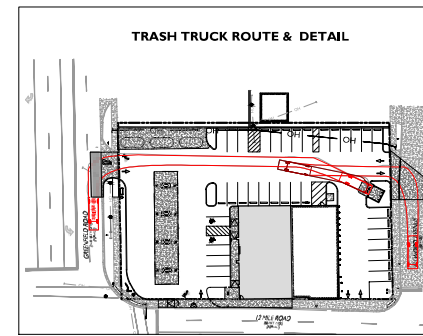
DATE PLOTTED: 08/23/2023 10:05:11 AM. PLOTTER: HP DesignJet T1100. PLOTTING METHOD: PLOTTING TO FILE. PLOTTING DEVICE: HP DesignJet T1100. PLOTTING DRIVER: HP DesignJet T1100. PLOTTING LANGUAGE: HP-GL/PS. PLOTTING SCALE: 1" = 20'. PLOTTING SHEET: C-2. PLOTTING STATUS: SUCCESSFUL.



Tanker Truck	
Overall Length	65.063ft
Overall Width	8.500ft
Overall Body Height	1.012ft
Min Body Ground Clearance	14.25ft
Track Width	8.500ft
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	47.240ft



Tower 4 Fire Truck	
Overall Length	42.710ft
Overall Width	8.420ft
Overall Body Height	7.745ft
Min Body Ground Clearance	0.655ft
Track Width	8.420ft
Lock-to-lock time	4.00s
Max Wheel Angle	45.00°



Hino 338 M + Wayne Royal GT 14 Refuse Truck	
Overall Length	27.893ft
Overall Width	8.01ft
Overall Body Height	13.488ft
Min Body Ground Clearance	8.042ft
Track Width	8.01ft
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	27.400ft

SYMBOL	DESCRIPTION
---	PROPERTY LINE
---	STRAK LINE
---	PROPOSED EASEMENT
---	PROPOSED CURB
---	PROPOSED FLUSH CURB
---	PROPOSED MOUNTABLE CURB
○	PROPOSED SIGNS / BOLLARDS
▭	PROPOSED BUILDING
▭	PROPOSED CONCRETE
▭	PROPOSED ASPHALT

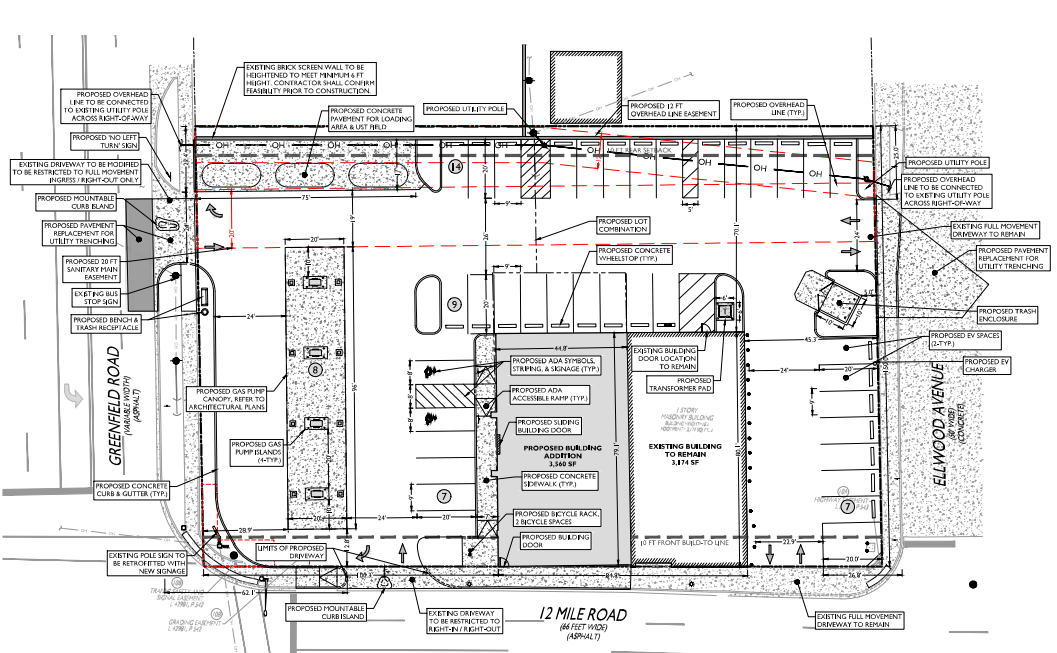
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NO.	DATE	ISSUE	DESCRIPTION
3	04/23/2023	JD	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
2	04/19/2023	JD	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
1	04/19/2023	JD	FOR SITE PLAN / SPECIAL LAND USE APPROVAL



LAND USE AND ZONING		
GATEWAY DISTRICT (GD)		
PROPOSED USE	PERMITTED USE	PROPOSED
RESTAURANT	PERMITTED USE	
RETAIL STORE	PERMITTED USE	
AUTOMATIC SERVICE STATION	PERMITTED USE	
ZONING REQUIREMENT	REQUIRED	PROPOSED
MINIMUM LOT AREA	17,000 SF	34,438 SF (0.80 AC)
MINIMUM LOT WIDTH	130 FT	150.0 FT
MINIMUM BUILDING HEIGHT	40 FT	< 40 FT
MINIMUM FRONT BUILD-TO-LINE	10 FT	0.0 FT (N/C)
MINIMUM SIDE YARD SETBACK	75%	80% (N/C)
MINIMUM REAR YARD SETBACK	0 FT	5.0 FT (N/C)
DRIVEWAY INTERSECTION SPACING	35 FT	30.0 FT (N/C)
DRIVEWAY TURN LINE SPACING	30 FT	30.0 FT (N/C)
MINIMUM DRIVEWAY WIDTH	30 FT	32.5 FT (N/C)
PROPOSED DRIVEWAY WIDTH	30 FT	24 FT
SERVICE STATION SPACING	50 FT	> 50 FT

OFF-STREET PARKING REQUIREMENTS		
CODE SECTION	REQUIRED	PROPOSED
§ 118-129	2.5 SPACES PER 1,000 SF OF GFA 1 SPACE PER 75 SF OF GFA	8 SPACES TOTAL 43 SPACES
§ 118-129(a)	1 GAS STATION WITH CONVENIENCE STORE 4 SPACES PER 100 SF OF GFA 1 SPACE PER PUMP + 3 SPACES (6,000 SF) / (750 SF) = 8 SPACES 1 (8 PUMPS) + 1 (PUMP) = 9 SPACES	9 SPACES TOTAL 7 = 38 + 3 = 43 SPACES
§ 118-226(a)	20' PARKING DIMENSIONS	19' FT X 20' FT
§ 118-254(b)	9' FT X 20' FT W/ 24 FT ABLE	W/ 24 FT ABLE
	LOADINGS	12' FT X 75' FT
	12' FT X 30' FT	

- (I) VARIANCE
- (II) PER § 118-123, TRASH ENCLOSURE (ACCESSORY STRUCTURE) IS NOT PERMITTED IN A SIDE YARD
- (III) NO CHANGE
- (IV) § 118-129 (1), AUTOMOBILE TRAILING STATION SHALL NOT BE LOCATED NEARER THAN 500 FT TO A SCHOOL, CHURCH, PUBLIC PARK OR AUTOPARK



SERVICE STATION SPACING
SCALE: 1" = 250' ±

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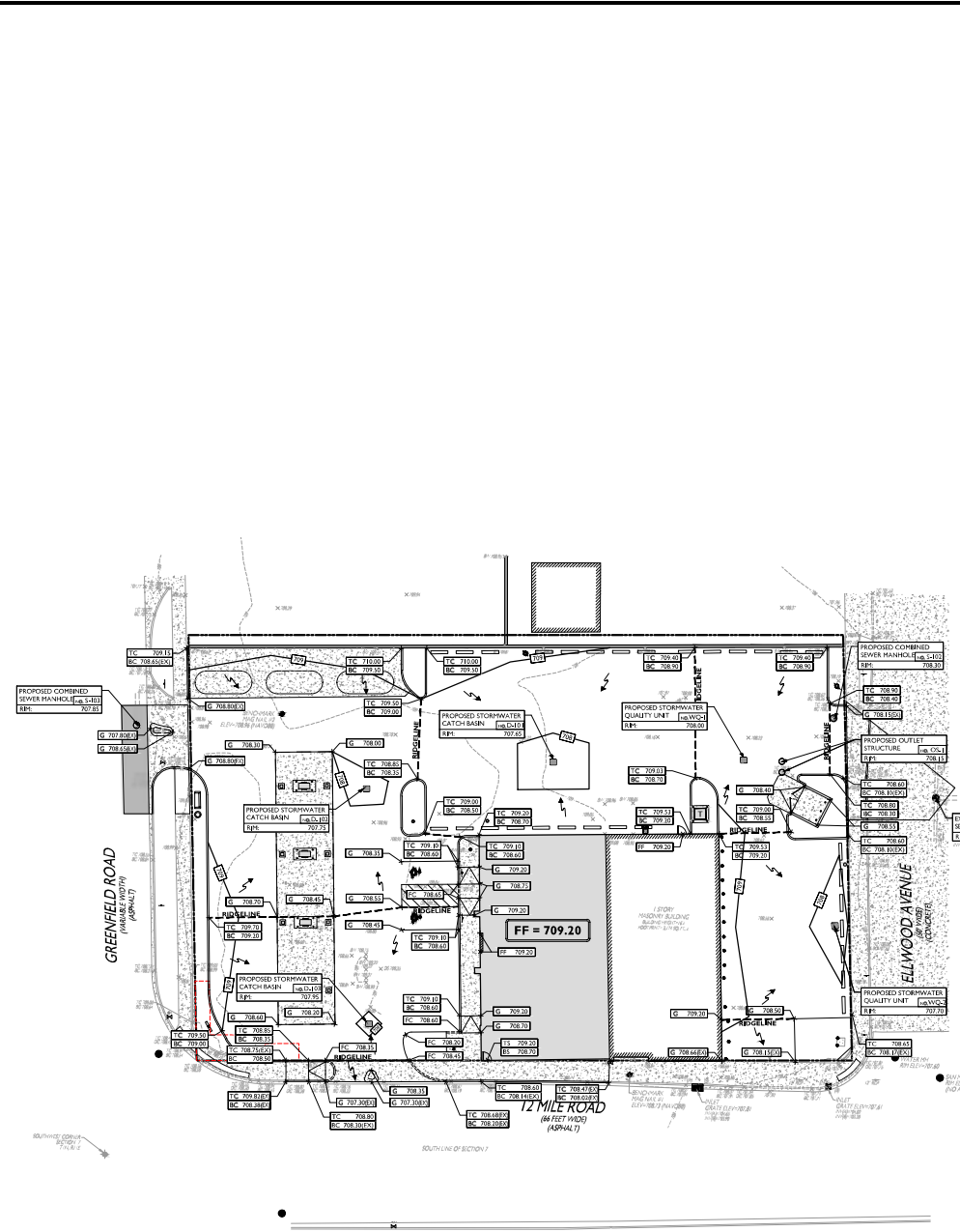
PROPOSED COMMERCIAL REDEVELOPMENT

PARCEL IDS: 2497355029, 2497355038, & 2497355040
CITY OF BERKLEY
DANLING COUNTY, MICHIGAN

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SCALE: 1" = 30' PROJECT ID: DET343M
TITLE: SITE PLAN
DRAWING: C-3

CONTRACTOR'S OBLIGATION TO VERIFY ALL INFORMATION IS CORRECT AND COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS.

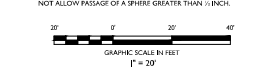


BENCHMARKS
 BENCHMARK #1 = 783.94 (NAD83) - IN CONCRETE BRICKWORK, NORTH-BEAC OF #3 ELEV. ROAD.
 BENCHMARK #2 = 784.14 (NAD83) - IN CONCRETE BRICKWORK, NORTH-BEAC OF #3 ELEV. ROAD.
 BENCHMARK #3 = 784.14 (NAD83) - IN CONCRETE BRICKWORK, NORTH-BEAC OF #3 ELEV. ROAD.
 BENCHMARK #4 = 784.14 (NAD83) - IN CONCRETE BRICKWORK, NORTH-BEAC OF #3 ELEV. ROAD.

SYMBOL	DESCRIPTION
---	PROPERTY LINE
---	PROPOSED GRADING CONTOUR
---	PROPOSED GRADING RIDGELINE
---	PROPOSED DIRECTION OF DRAINAGE FLOW
X	PROPOSED GRADE SPOT SHOT
X	PROPOSED TOP OF CURB / BOTTOM OF CURB SPOT SHOT
X	PROPOSED FLUSH CURB SPOT SHOT
X	PROPOSED TOP OF STEP / BOTTOM OF STEP SPOT SHOT

- GRADING NOTES**
- ALL SOIL AND MATERIAL REMOVED FROM THE SITE SHALL BE DEPOSITED IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS. ANY GROUNDWATER DEWATERING PRACTICES SHALL BE PERFORMED UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS FOR THE REMOVAL OF EXISTING GROUNDWATER. ALL SOIL BROUGHT TO THE SITE SHALL BE CERTIFIED CLEAN & RESPONSIBLE SHALL MAINTAIN RECORDS OF ALL MATERIALS BROUGHT TO THE SITE.
 - THE CONTRACTOR IS RESPONSIBLE TO PROVIDE TEMPORARY AND/OR PERMANENT SHORING WHERE REQUIRED DURING EXCAVATION ACTIVITIES INCLUDING BUT NOT LIMITED TO UTILITY TRENCHES TO ENSURE THE STRUCTURAL INTEGRITY OF NEARBY STRUCTURES AND STABILITY OF THE SURROUNDING SOILS.
 - PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 4 INCHES TO 7 INCHES ABOVE EXISTING GRADES UNLESS OTHERWISE NOTED. THE CONTRACTOR WILL VERIFY ALL TAKEOFF CURB GRADE SHEETS TO STONEFIELD ENGINEERING & DESIGN, LLC FOR REVIEW AND APPROVAL PRIOR TO POURING CURBS.
 - THE CONTRACTOR IS RESPONSIBLE TO SET ALL PROPOSED UTILITY COVERS AND RESET ALL EXISTING UTILITY COVERS WITHIN THE PROJECT LIMITS TO PROPOSED GRADE IN ACCORDANCE WITH ANY APPLICABLE MUNICIPAL, COUNTY, STATE AND/OR UTILITY AUTHORITY REGULATIONS.
 - MINIMUM SLOPE REQUIREMENTS TO PREVENT POHNING SHALL BE AS FOLLOWS:
 • CURB CUTTERS: 1.00%
 • CONCRETE SURFACES: 1.00%
 • ASPHALT SURFACES: 1.00%
 • A MINIMUM SLOPE OF 1.00% SHALL BE PROVIDED AWAY FROM ALL BUILDINGS. THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE FROM THE BUILDING IS ACHIEVED AND SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC IF THE CONDITION CANNOT BE MET.
 - FOR PROJECTS WHERE BASINMENTS ARE PROPOSED, THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE DEPTH TO GROUNDWATER AT THE LOCATION OF THE PROPOSED STRUCTURE. IF GROUNDWATER IS ENCOUNTERED WITHIN THE BASINMENT AREA, SPECIAL CONSTRUCTION METHODS SHALL BE UTILIZED AND REVIEWED/PROVED BY THE CONSTRUCTION CODE OFFICIAL IF SUMP PUMPS ARE UTILIZED. ALL DRAINAGES SHALL BE CONNECTED DIRECTLY TO THE PUBLIC STORM SEWER SYSTEM WITH APPROVAL FROM THE COVERING STORM SEWER SYSTEM AUTHORITY.

- ADA NOTES**
- THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION WITHIN THE ADA PARKING SPACES AND ACCESSIBLE AREAS.
 - THE CONTRACTOR SHALL PROVIDE COMPLIANT SIDEWALKS AT ALL ADA PARKING AREAS IN ACCORDANCE WITH STATE REGULATIONS.
 - THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 3.00% RUNNING SLOPE AND A MAXIMUM 2.00% CROSS SLOPE ALONG SIDEWALKS WITHIN THE ACCESSIBLE PATH OF TRAVEL. USE THE SITE PLAN FOR THE LOCATION OF THE ACCESSIBLE PATH. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE ACCESSIBLE PATH OF TRAVEL IS 36 INCHES WIDE OR GREATER UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
 - THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION AT ALL LANDINGS, WALKWAYS, BRIDGES, BUT ARE NOT LIMITED TO THE TOP AND BOTTOM OF AN ACCESSIBLE RAMP. AT ACCESSIBLE BRIDGE PARADELTS AT AN ANGLE FROM THE WALK-UP PATH AND AT TURNING SPACES ALONG THE ACCESSIBLE PATH OF TRAVEL, THE LANDING AREA SHALL HAVE A MINIMUM CLEAR AREA OF 49 INCHES BY 60 INCHES UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
 - THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 3.33% RUNNING SLOPE AND A MAXIMUM 2.00% CROSS SLOPE ON ANY CURB RAMP ALONG THE ACCESSIBLE PATH OF TRAVEL WHERE PROPOSED CURB RAMP PARADELTS SHALL HAVE A SLOPE GREATER THAN 3.33%. A LANDING AREA IS PROVIDED AT THE TOP OF THE RAMP FOR ALTERNATE & CURB RAMP PARADELTS SHALL NOT HAVE A SLOPE GREATER THAN 3.33%. A LANDING AREA IS NOT PROVIDED AT THE TOP OF THE RAMP. CURB RAMP PARADELTS SHALL NOT BE MORE THAN 6 INCHES IN ELEVATION WITHOUT A HANDRAIL. THE CLEAR WIDTH OF A CURB RAMP SHALL BE GREATER THAN 48 INCHES WITHOUT A HANDRAIL AND SHALL NOT BE MORE THAN 30" IN ELEVATION WITHOUT A LANDING AREA IS PROVIDED AT THE TOP AND BOTTOM OF THE RAMP. A SLOPE REBENT SURFACE SHALL BE PROVIDED ALONG THE ACCESSIBLE PATH AND WITHIN ADA PARKING AREAS.
 - THE CONTRACTOR SHALL MAINTAIN A MAXIMUM OF 1/4" INCHES VERTICAL CHANGE IN LEVEL ALONG THE ACCESSIBLE PATH. WHERE A CHANGE IN LEVEL BETWEEN 0 INCHES AND 1/4" INCHES OCCURS, THE CONTRACTOR SHALL ENSURE THAT THE TOP 1/4" INCH CHANGE IN LEVEL IS BLENDED WITH A SLOPE NOT STEPER THAN 1:10. VERTICAL AND 2 UNITS HORIZONTAL (1:2) SLOPE.
 - THE CONTRACTOR SHALL ENSURE THAT ANY OPENINGS (GAPS OR HORIZONTAL SEPARATION) ALONG THE ACCESSIBLE PATH SHALL NOT ALLOW PASSAGE OF A SPHERE GREATER THAN 1/4" INCH.



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SITE DEVELOPMENT PLANS

MUG & JUG

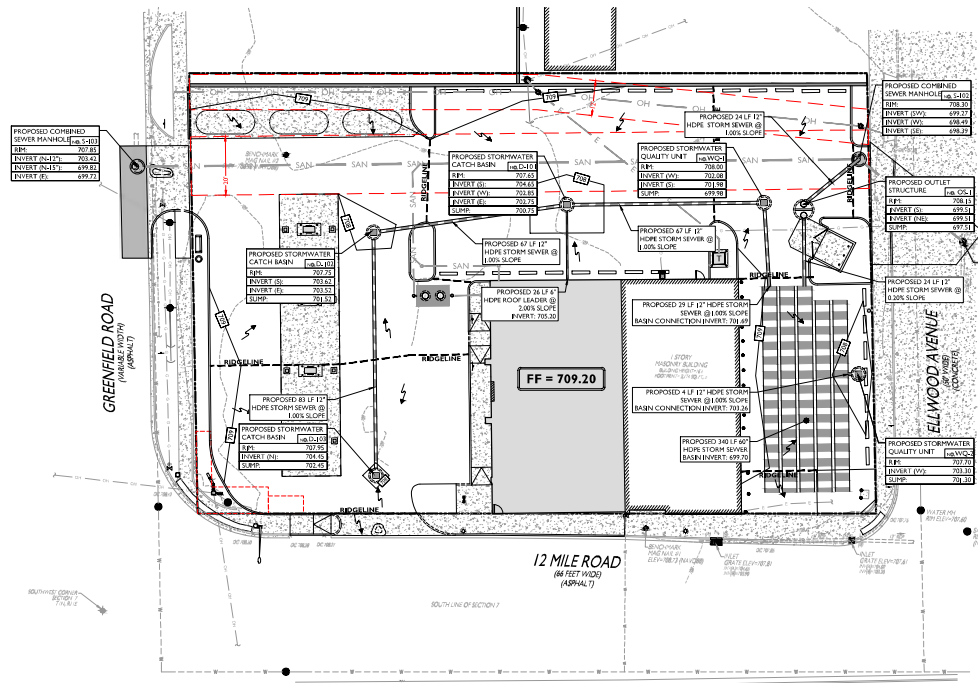
PROPOSED COMMERCIAL REDEVELOPMENT

PARCEL ID: 240735030, 240735038, & 240735040
 CITY OF BURLINGTON, ILLINOIS
 DANLON COUNTY, MICHIGAN

STONEFIELD
Engineering & Design

SCALE: 1" = 30'
 PROJECT ID: DET2403M
 TITLE: GRADING PLAN
 DRAWING: C-4

1. STONEFIELD ENGINEERING, INC. 2. 300 N. WILSON AVENUE, SUITE 100, BIRMINGHAM, AL 35203 3. TEL: (205) 992-8800 4. FAX: (205) 992-8801 5. WWW.STONEFIELDENGINEERING.COM



STORMWATER MANAGEMENT CALCULATIONS

(Based on National Stormwater Engineering Design Standards (NSWDES) 2010)

Project:	Breakpoint Development - Berkley	Designer:	NAB	Date:	01/07/23
PART A: Determination of Surface Runoff					
Landcover:	Area (AC)	Area (SF)	C Value*	Weighted Value	
Building Footprint	0.74	13,200	0.35	3645	
Landscaped Areas - HSG D	0.01	1,338	0.30	381	
Subtotal:	0.80	14,538		3,346	
*Values obtained from National Stormwater Engineering Design Standards (NSWDES) 2010					
$T_{con} = 30.20P^{0.77}$ (8.17xT) ^{0.77}					
T_{con} Time of Concentration:	Retention - Assume 20 min				
	Conversion/Retention - Assume 15 min				
	Site < 4 acres - Assume 10 min				
PART C: Channel Protection Volume Control					
$V_{con} = 4.719 C^2 A$					

Composite C Value, C ₁	0.81
Water Quality Intensity, I _{wp}	3.78 IN/HR
Design Storm Period, P ₁	1 YEAR
Time of Concentration, T ₁	18.0 MIN
Required CPVC Volume, V _{CPVC}	3,414.73 CF
Provided CPVC Volume, V _{CPVC}	0.00 CF
CPVC is Waived	
Infiltration Rate, K _{inf}	0.06 in/hr
Area of Paving Depth, A _p	0.00 FT

PART D: Water Quality Control	
Mechanical Separation	
is Mechanical Separation Proposed?	Yes
Mechanical Separator is Required	
$I_s = 33.80P^{0.77}$ (9.17P) ^{0.77}	
$Q_{10} = C^2 A^2 I_s$	
is Sediment Trapping Proposed?	No
Sediment Trapping is Waived	
Required Forebay Volume, V _{FB}	0.00 CF
Provided Forebay Volume, V _{FB}	0.00 CF

PART E: Channel Protection Rate Control Extended Detention	
$H_{ext} = 4.897 C^2 A$	
Extended Detention Volume, V _{ED}	4,890.76 CF
Total Head, h _{tot}	5.00 FT
is 18\"/>	

PART F: Detention & Flood Control Facilities		
$Q_{10} = C^2 A^2 I_s$	100 y Post-Development Peak Inflow Rate, Q ₁₀	3.51 CFS
$I_{10} = 83.3 / (T_c + 0.17) + 0.81(I)$	100 y Rainfall Intensity, I ₁₀	7.63 in/hr
$Q_{10} = 1.188 C^2 A^2 I_{10} / (60 S)$	Variable Release Rate, Q ₁₀	1.15 CFS/AC
$Q_{10} = Q_{10} A$	100 y Release Rate, Q ₁₀	0.93 CFS
$R = 0.204 - 0.15 LN(Q_{10} / Q_{10})$	Storage Curve Factor, R	0.46
$V_{10} = 18.86 C^2 A$	Post-Development 100 y Basin Volume, V ₁₀	13,737.79 CFS
$V_{10} = V_{10} A$	100 y Detention Volume, V ₁₀	4,524.43 CF
$R = V_{10} / V_{10}$	Volume Required, V ₁₀	6.52h CF

BASIN VOLUME REQUIRED			
$R = V_{10} / V_{10}$	Volume Required, V ₁₀	6.52h CF	
UNDERGROUND BASIN VOLUME PROVIDED			
Basin Storage Width, W _s	0.00 FT	Pipe Inner Diameter, H _i	5.00 FT
Basin Storage Depth, H _s	0.00 FT	Pipe Outer Diameter, H _o	5.00 FT
Basin Yield Ratio, P _y	0%	Basin Storage Depth, H _s	0.00 FT
$V_s = [(W_s H_s) + (H_s^2 P_y)] / (2 H_s)$		Basin Storage Volume, V _s	0.00 CF
$V_s = V_s / 2$		Required Basin Quantity, Q ₁₀	322 LF
		Basin Volume Provided	348 LF
		Basin Volume Proposed	6.67h CF

BENCHMARKS

- BENCHMARK #1 = H&G N&E = N&E 73 (N&E 0&B)
- BENCHMARK #2 = H&G N&E = NORTH-B&E OF 12 MILE ROAD
- BENCHMARK #3 = H&G N&E = N&E 8% (N&E 0&B)
- BENCHMARK #4 = H&G N&E = N&E 8% (N&E 0&B)

SYMBOL	DESCRIPTION
	PROPERTY LINE
	PROPOSED GRADING CONTOUR
	PROPOSED GRADING RIDGELINE
	PROPOSED STORMWATER STRUCTURES
	PROPOSED STORMWATER PIPING
	PROPOSED UNDERGROUND OUTLET STRUCTURE

DAMAGE AND UTILITY NOTES

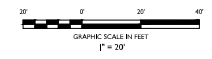
- THE CONTRACTOR TO PERFORM A TEST PIT PRIOR TO CONSTRUCTION (RECOMMEND 30 DAYS PRIOR) AT LOCATIONS OF EXISTING UTILITY CROSSINGS FOR STORMWATER IMPROVEMENTS SHOULD A CONFLICT EXIST THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & BERKLEY ENGINEERING. CONTRACTOR SHALL START CONSTRUCTION OF STORM LINES AT THE LOWEST DEPTH AND WORK UPGRADING.
- THE CONTRACTOR IS REQUIRED TO CALL THE APPROPRIATE AUTHORITY FOR NOTICES OF CONSTRUCTION (NOC) AND UTILITY MARK OUT PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH STATE LAW. CONTRACTOR IS REQUIRED TO CORRECT THE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES BY THE FIELD. SHOULD A DISCREPANCY EXIST BETWEEN THE FIELD LOCATION OF A UTILITY AND THE LOCATION SHOWN ON THE PLAN SET OR SURVEY, THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & BERKLEY IMMEDIATELY IN WRITING.
- THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD OF THE AS-BUILT LOCATION OF ALL PROPOSED UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR SHALL NOTE ANY DISCREPANCIES BETWEEN THE AS-BUILT LOCATIONS AND THE LOCATIONS SHOWN ON THE PLAN SET. THE RECORDS SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.

EXCAVATION, SOIL PREPARATION AND DETERMINING NOTES

- THE CONTRACTOR IS REQUIRED TO REVIEW THE REFERENCED GEOTECHNICAL CONDITIONS PRIOR TO CONSTRUCTION. THESE DOCUMENTS SHALL BE CONSIDERED A PART OF THE PLAN SET.
- THE CONTRACTOR IS REQUIRED TO PREPARE SUBGRADE SOLES BENEATH ALL PROPOSED IMPROVEMENTS AND BACKFILL ALL EXCAVATIONS IN ACCORDANCE WITH RECOMMENDATIONS BY THE GEOTECHNICAL ENGINEER OF RECORD.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SHORING FOR ALL EXCAVATIONS AS REQUIRED. CONTRACTOR SHALL HAVE THE SHORING DESIGNED BY A QUALIFIED PROFESSIONAL SHORING ENGINEER & DESIGN LLC AND THE OWNER PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL OPEN EXCAVATIONS ARE PROTECTED AND PROTECTED IN ACCORDANCE WITH ALL LISTED OSHA REGULATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY REQUIRED PERMITS FOR EXCAVATING OPERATIONS AND GROUNDWATER DEPIAL.

STORMWATER UNDERGROUND BMP CONSTRUCTION NOTES

- THE CONTRACTOR SHALL INSTALL AND BACKFILL THE UNDERGROUND BMP IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
- UNDERGROUND BASINS SHALL UTILIZE A STONE BACKFILL WITH A PERCENT (0.85) TO 30% SS.
- NO CONSTRUCTION LOADING OVER UNDERGROUND BASINS IS PERMITTED UNTIL BACKFILL COMPLETE PER THE MANUFACTURER'S SPECIFICATIONS. NO VEHICLES SHALL BE STAGED OR OPERATE FROM A FIXED POSITION OVER THE BASIN.



NO.	DATE	ISSUE	DESCRIPTION
1	01/07/23	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
2	01/07/23	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
3	01/07/23	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL

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Phone: 205.267.1115

SITE DEVELOPMENT PLANS

MUG & JUG

PROPOSED COMMERCIAL REDEVELOPMENT

PARCEL ID: 240735038, 240735039, & 240735040
CITY OF BERKLEY
DALLAS COUNTY, MICHIGAN

STONEFIELD
ENGINEERING & BERKLEY

SCALE: 1" = 30'
PROJECT ID: DET24034
TITLE:
STORMWATER MANAGEMENT PLAN
DRAWING:
C-5

NO.	DATE	ISSUE	DESCRIPTION
1	08/18/2023	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
2	08/18/2023	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
3	08/23/2023	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL

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SITE DEVELOPMENT PLANS

MUG & JUG

PROPOSED COMMERCIAL REDEVELOPMENT

PARCEL ID: 240735500, 240735503, & 240735540
CITY OF BERKLEY
OAKLAND COUNTY, MICHIGAN

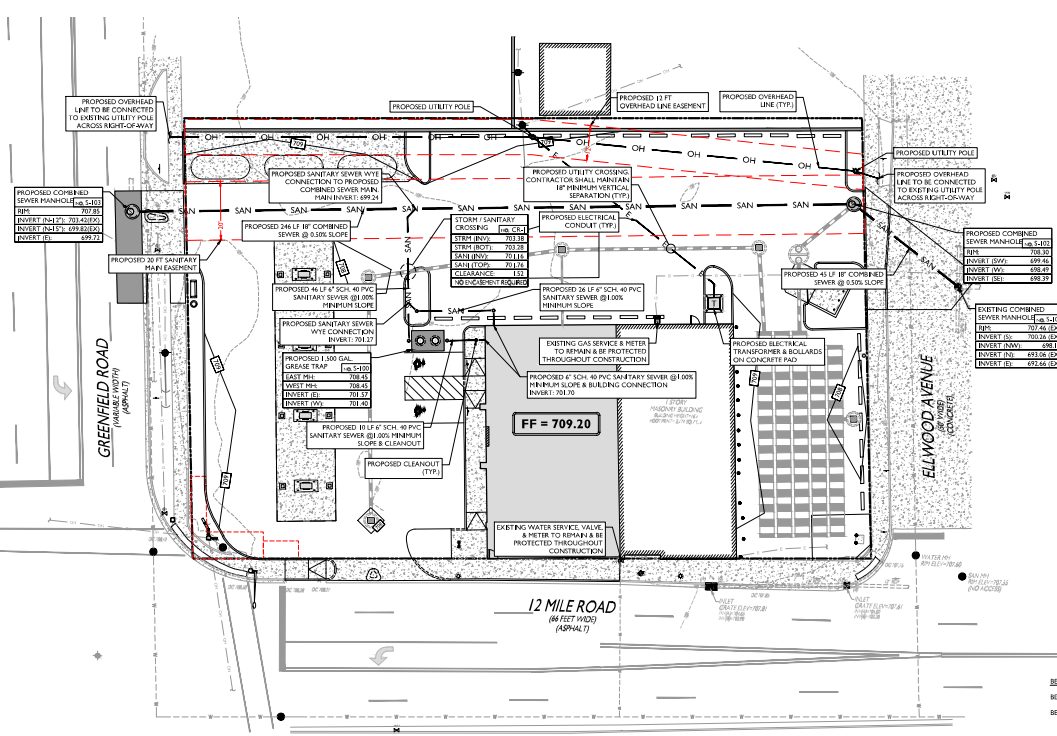
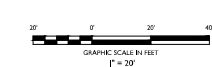


STONEFIELD
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SCALE: 1" = 30'
PROJECT ID: DET343M
TITLE: UTILITY PLAN
DRAWING: C-6

SYMBOL	DESCRIPTION
---	PROPERTY LINE
- - - - -	PROPOSED EASEMENT
— SAN —	PROPOSED SANITARY LATERAL
— E —	PROPOSED ELECTRIC CONDUITS
— OH —	PROPOSED OVERHEAD WIRES
⊙	PROPOSED SANITARY STRUCTURE / CLEANOUT
⊙	PROPOSED UTILITY POLE
⊞	PROPOSED TRANSFORMER ON CONCRETE PAD WITH BOLLARDS

- DRAINAGE AND UTILITY NOTES**
- THE CONTRACTOR IS REQUIRED TO CALL THE APPROPRIATE AUTHORITY FOR NOTICE OF CONSTRUCTION/EXCAVATION AND UTILITY MARK-OUT PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH STATE LAW. CONTRACTOR IS REQUIRED TO CORRECT THE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES IN THE FIELD SHOULD A DISCREPANCY EXIST BETWEEN THE FIELD LOCATION OF A UTILITY AND THE LOCATION SHOWN ON THE PLAN SET OR SURVEY. THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN LLC IMMEDIATELY BY WRITING.
 - THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN IN OPERATION ALL UTILITIES NOT INDICATED TO BE REMOVED.
 - THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO ANY EXISTING UTILITY LOCATED TO REMAIN WITHIN THE LIMITS OF THE PROPOSED WORK DURING CONSTRUCTION.
 - A MINIMUM HORIZONTAL SEPARATION OF 10 FEET IS REQUIRED BETWEEN ANY SANITARY SEWER SERVICE AND ANY WATER LINES IF THE SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASUREMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN LLC.
 - ALL WATER LINES SHALL BE VERTICALLY SEPARATED ABOVE SANITARY SEWER LINES BY A MINIMUM DISTANCE OF 18 INCHES. IF THE SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASUREMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN LLC.
 - THE CONTRACTOR TO REPORT A TEST PIT PRIOR TO CONSTRUCTION RECOMMENDED 30 DAYS PRIOR AT LOCATIONS OF EXISTING UTILITY CROSSINGS FOR WATER AND SANITARY SEWER CONNECTION PREVENTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN LLC IN WRITING.
 - THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING GAS, ELECTRIC AND TELECOMMUNICATION CONNECTIONS WITH THE APPROPRIATE GOVERNING AUTHORITY.
 - CONTRACTOR SHALL START CONSTRUCTION OF ANY SANITARY SEWER AT THE LOWER INVERT AND WORK UPWARD.
 - THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD SET OF PLANS REFLECTING THE LOCATION OF EXISTING UTILITIES THAT HAVE BEEN CAPABLE, ABANDONED, OR REMOVED BASED ON THE DEPARTMENT/PERMITS ACTIVITIES REQUIRED IN THE PLAN SET. THIS DOCUMENT SHALL BE PROVIDED TO THE OWNER UPON COMPLETION OF WORK.
 - THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD OF THE AS-BUILT LOCATIONS OF ALL PROPOSED UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR SHALL NOTIFY ANY DISCREPANCIES BETWEEN THE AS-BUILT LOCATIONS AND THE LOCATIONS SPECIFIED WITHIN THE PLAN SET. THE RECORD SET PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.



C:\PROJECTS\240735500\240735500.dwg, 08/18/23 10:00 AM, 10/18/23 10:00 AM, 10/18/23 10:00 AM



LIGHT FIXTURE 'A' & 'B'



LIGHT FIXTURE 'C' & 'D'



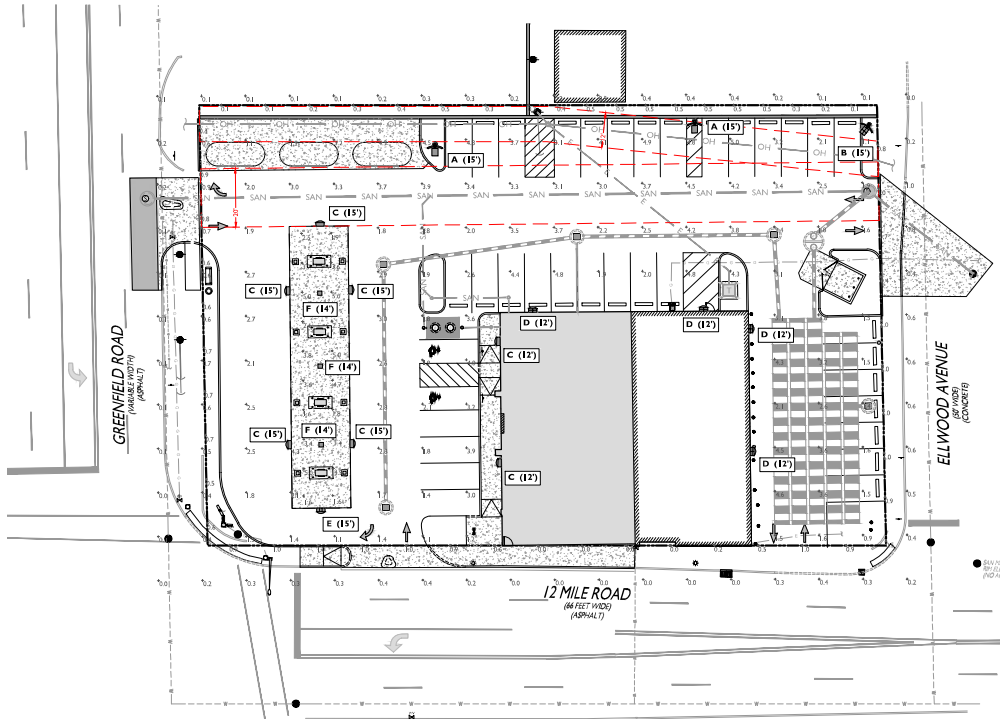
LIGHT FIXTURE 'E'



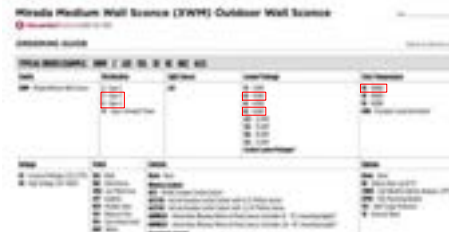
LIGHT FIXTURE 'F'

PROPOSED LUMINAIRE SCHEDULE							
SYMBOL	LABEL	QUANTITY	SECURITY LIGHTING	DISTRIBUTION	LLF	MANUFACTURER	IES FILE
	A	2	MIRADA MEDIUM LED AREA LIGHT - 12L - 30K - BACKSHIELD	TYPE II	0.9	LSLIGHTING	MIR-LED-12L-SL-30K-70C-IES.ies
	B	1	MIRADA MEDIUM LED AREA LIGHT - 7L - 30K - BACKSHIELD	FT	0.9	LSLIGHTING	MIR-LED-7L-SL-30K-70C-IES.ies
	C	7	MIRADA MEDIUM WALL SCONCE - 4L - 30K	TYPE III	0.9	LSLIGHTING	XWM-LED-4L-30K.ies
	D	4	MIRADA MEDIUM WALL SCONCE - 8L - 30K	TYPE IV	0.9	LSLIGHTING	XWM-LED-8L-30K.ies
	E	1	MIRADA SMALL SILICONE - 2L - 30K	TYPE II	0.9	LSLIGHTING	XWS-LED-2L-SL-30K-70C-IES.ies
	F	3	LEDLED SOFFIT LIGHT - SS - WW	N/A	0.9	LSLIGHTING	XPS-LED-SS-WW-IES.ies

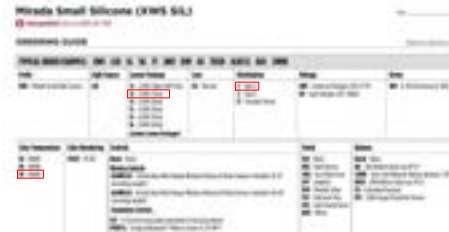
LIGHTING REQUIREMENTS		
CODE SECTION	REQUIRED	PROPOSED
§ 18-443(a)(3)	LIGHT FIXTURES, INCLUDING THE BASE, SHALL NOT BE TALLER THAN THE BUILDING WINDOWS AND THEY SHALL BE NOT TALLER THAN 5 FT, WHICHEVER IS SHORTER.	5 FT
§ 18-443(a)(4)	LEVEL OF LIGHTING SHALL NOT EXCEED: 0.5 FC AT RESIDENTIAL PROPERTY LINE 1.0 FC AT NON-RESIDENTIAL PROPERTY LINE	0.5 FC 1.0 FC
§ 18-443(a)	OFF-STREET PARKING LEVEL OF LIGHTING: MINIMUM 1.5 FC MAXIMUM 5.0 FC	1.5 FC 5.0 FC



LIGHT FIXTURE 'A' & 'B'



LIGHT FIXTURE 'C' & 'D'



LIGHT FIXTURE 'E'

SYMBOL DESCRIPTION

- PROPOSED LIGHTING FIXTURE (MOUNTING HEIGHT)
- PROPOSED LIGHTING INTENSITY (FOOT-CANDELES)
- PROPOSED AREA LIGHT
- PROPOSED BUILDING MOUNTED / CANOPY LIGHT

GENERAL LIGHTING NOTES

- THE LIGHTING LEVELS DERIVED WITHIN THE PLAN SET ARE CALCULATED UTILIZING DATA OBTAINED FROM THE LITTED MANUFACTURER ACTUAL ILLUMINATION LEVELS AND PERFORMANCE OF ANY PROPOSED LIGHTING FIXTURE MAY VARY DUE TO UNCONTROLLABLE VARIABLES SUCH AS WEATHER, VOLTAGE SUPPLY LINE TOLERANCE, EQUIPMENT SERVICE LIFE AND OTHER VARIABLES BEYOND CONTROL.
- THE PLAN SET SHALL BE CONSIDERED APPROXIMATE. THE EXISTING LIGHT LEVELS ARE BASED ON FIELD OBSERVATIONS AND THE LIGHTING FIXTURE MODEL.
- UNLESS NOTED OTHERWISE WITHIN THE PLAN SET, THE LIGHT LOSS FACTORS USED BY THE LIGHTING ANALYSIS ARE AS FOLLOWS:
 - LIGHT DIFFUSER, BRACKETS, LEDS: 0.90
 - HIGH PRESSURE SODIUM: 0.72
 - METAL FINISH: 0.72
- THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC BY WRITING PRIOR TO THE START OF CONSTRUCTION OF ANY PROPOSED LIGHTING LOCATIONS THAT CONFLICT WITH EXISTING PROPOSED SIGNAGE, UTILITIES OR OTHER INFRASTRUCTURE.
- THE CONTRACTOR IS RESPONSIBLE TO PREPARE A WIRING PLAN AND PROVIDE ELECTRIC SERVICE TO ALL PROPOSED LIGHTING FIXTURES. THE CONTRACTOR IS REQUIRED TO PREPARE AN AS-BUILT PLAN OF WIRING AND PROVIDE COPIES TO THE OWNER AND STONEFIELD ENGINEERING & DESIGN, LLC.

NO.	DATE	ISSUE	DESCRIPTION
1	08/14/2023	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
2	08/14/2023	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
3	08/23/2023	ISSUE	FOR SITE PLAN / SPECIAL LAND USE APPROVAL

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SITE DEVELOPMENT PLANS

MUG & JUG

PROPOSED COMMERCIAL REDEVELOPMENT

PARCEL ID: 280735809, 280735808, & 280735840
CITY OF BURLINGTON
DANLON COUNTY, MICHIGAN

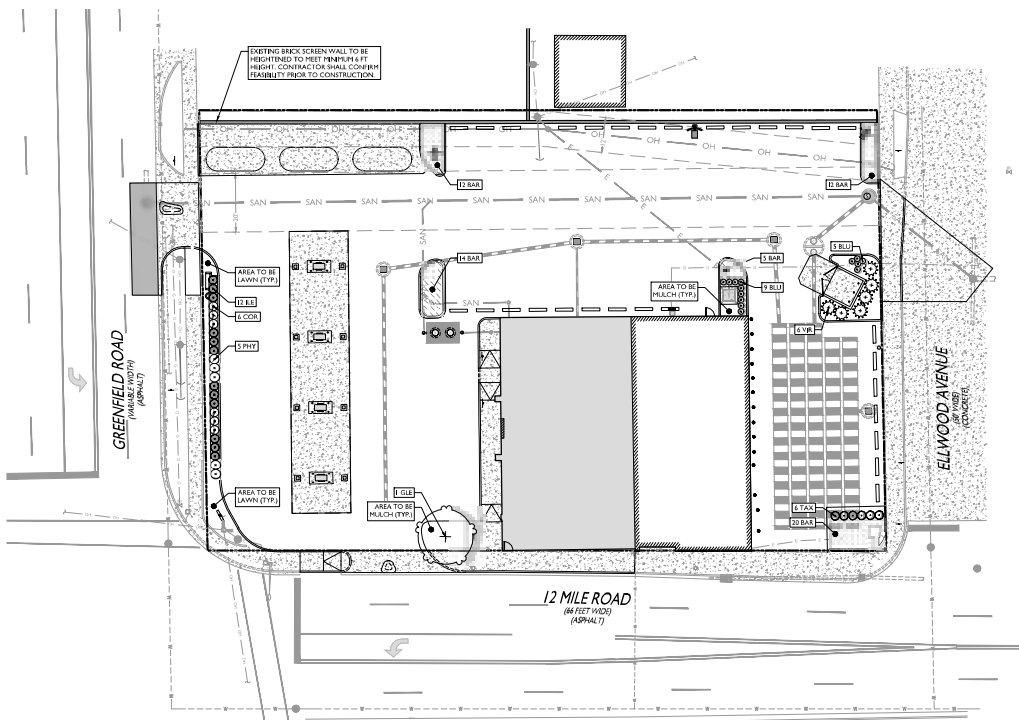


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SCALE: 1" = 20' PROJECT ID: DET-24244

TITLE: LIGHTING PLAN

DRAWING: C-7



CODE SECTION	REQUIRED	PROPOSED
3 118-222 (03)	PARKING LOT SCREENING WHERE A PARKING LOT ADJUTS A RESIDENTIAL DISTRICT: A FT TALL MASONRY WALL REQUIRED.	EXISTING WALL TO BE REPOSED.

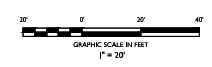
SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
DECIDUOUS TREES						
[Symbol]	GLE	1	OLEA FRACANTHES PARISH SHADBLIND*	SHADEMASTER HONEY LOCUST	2' - 2.5' CAL	866
EVERGREEN TREES						
[Symbol]	BLU	14	JUNIPERUS SCOPULORUM BLUE ARROW*	BLUE ARROW JUNIPER	6' - 8' HT	866
[Symbol]	VER	4	JUNIPERUS VIRGINIANA M. SELECT GREEN	EMERALD FEATHER EASTERN REDCEDAR	4' - 6' HT	866
SHRUBS						
[Symbol]	COR	4	CORNUS STOLONIFERA YAKOWY*	ARCTIC BIRD BLUE DOGWOOD	18" - 24"	FO1
[Symbol]	PHY	5	PHYSCOCARPUS OPULIFOLIUS 'LITTLE JOCK'	LITTLE LEAF DWARF PINKYAK*	18" - 24"	FO1
EVERGREEN SHRUBS						
[Symbol]	BLE	12	ILEX GLABRA 'COMPACTA'	COMPACT HOLLERY*	18" - 24"	FO1
[Symbol]	TAX	6	TAXUS X MEDIA SANDWICH*	DENSE ANGLO-CANADIAN YEW	18" - 24"	FO1
GROUND COVERS						
[Symbol]	BAR	63	JUNIPERUS SCOPULORUM PARISH SHADBLIND*	BLUE ARROW JUNIPER	1 GAL	FO1 36" OC

NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN ON THE LANDSCAPE PLAN AND WITHIN THE PLANT LIST, THE PLAN SHALL OBTAIN.

Know what's below
Call before you dig.

IRIGATION NOTE:
IRIGATION CONTRACTOR TO PROVIDE A DESIGN FOR AN IRIGATION SYSTEM SEPARATING PLANTING BEDS FROM LAWN AREA. PRIOR TO CONSTRUCTION, DESIGN IS TO BE SUBMITTED TO THE PROJECT LANDSCAPE DESIGNER FOR REVIEW AND APPROVAL. WHERE POSSIBLE, Drip IRIGATION AND OTHER WATER CONSERVATION TECHNIQUES SUCH AS BARRIERS SHALL BE IMPLEMENTED. CONTRACTOR TO VERIFY HANDOUT ON IREI EXISTING WATER PRESSURE. AVAILABLE MEASURED IN PSI. PRESSURE REDUCING DEVICES OR BOOSTER PUMPS SHALL BE PROVIDED TO MEET EXISTING PRESSURE REQUIREMENTS. DESIGN TO SHOW ALL VALVES, FITTINGS, HEADS, BACKFLOW PREVENTION, METERS, CONTROLLERS AND SIZES WITHIN HARDSCAPE AREAS.

- LANDSCAPING NOTES**
1. THE CONTRACTOR SHALL RESTORE ALL DISTURBED GRASS AND LANDSCAPE AREAS TO MATCH EXISTING CONDITIONS UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
 2. THE CONTRACTOR SHALL RESTORE ALL DISTURBED LAWN AREAS WITH A MINIMUM 4" LAYER OF TOPSOIL AND SEED.
 3. THE CONTRACTOR SHALL RESTORE MULCH AREAS WITH A MINIMUM 3" LAYER OF MULCH.
 4. THE SLOPE SHALL BE ALLOWABLE IN LANDSCAPE RESTORATION AREAS SHALL BE 3 FEET HORIZONTAL TO 1 FOOT VERTICAL (3:1) UNLESS OTHERWISE INDICATED OTHERWISE WITHIN THE PLAN SET.
 5. THE CONTRACTOR IS REQUIRED TO LOCATE ALL SPRINKLER HEADS BY AREA OF LANDSCAPE DISTURBANCE PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL RELOCATE SPRINKLER HEADS AND LINES IN ACCORDANCE WITH DRAINAGE DIRECTION WITHIN AREAS OF DISTURBANCE.
 6. THE CONTRACTOR SHALL ENSURE THAT ALL DISTURBED LANDSCAPE AREAS ARE GRADED TO MEET FLUSH AT THE BURNED OR WALKWAYS AND TOP OF CURB UNLESS EXCEPT UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET. NO ABRUPT CHANGES IN GRADE ARE PERMITTED IN DISTURBED LANDSCAPE AREAS.



NO.	DATE	ISSUE	DESCRIPTION
1	08/18/2017	JDB	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
2	08/18/2017	JDB	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
3	04/10/2018	JDB	FOR SITE PLAN / SPECIAL LAND USE APPROVAL

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SITE DEVELOPMENT PLANS

MUG & JUG

PROPOSED COMMERCIAL REDEVELOPMENT

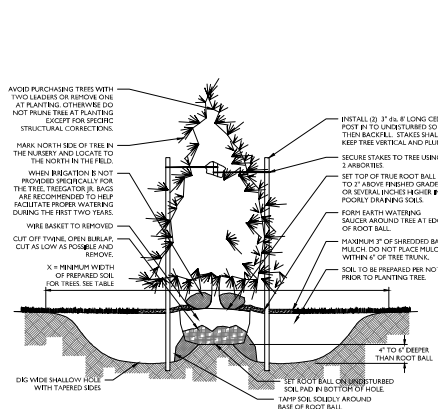
PARCEL ID: 210735508, 210735509, & 210735540
CITY OF BURLINGTON, WISCONSIN
DANLON COUNTY, MICHIGAN

STONEFIELD
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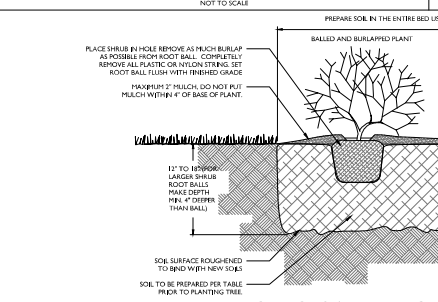
SCALE: 1" = 20' PROJECT ID: DET34304H
TITLE: LANDSCAPING PLAN
DRAWING: C-8

NOTES

- 1. FOR CONTAINER-GROWN TREES USE FINGERS OR SMALL HAND TOOLS TO RAIL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL... 2. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS. 3. SOIL AMENDMENTS: *MOISTURIZER HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED FINA BARK (5% TO 30% BY VOLUME) OR GYP... *MOISTURIZER EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR EAY, SHREDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.



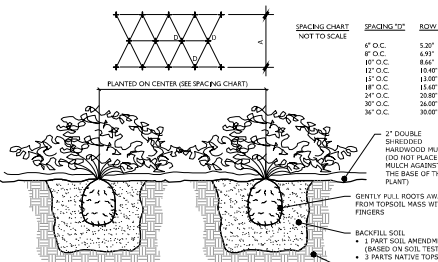
CONIFEROUS TREE PLANTING DETAIL



DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

NOTES

- 1. THOROUGHLY SOAK THE GROUND COVER ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS. 2. SOIL AMENDMENTS: *MOISTURIZER HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED FINA BARK (5% TO 30% BY VOLUME) OR GYP... *MOISTURIZER EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR EAY, SHREDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.



GROUND COVER/PERENNIAL/ANNUAL PLANTING DETAIL

NOTES

- 1. THOROUGHLY SOAK THE GROUND COVER ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS. 2. SOIL AMENDMENTS: *MOISTURIZER HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED FINA BARK (5% TO 30% BY VOLUME) OR GYP... *MOISTURIZER EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR EAY, SHREDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.



GROUND COVER/PERENNIAL/ANNUAL PLANTING DETAIL

GENERAL LANDSCAPE NOTES

- 1. THE LANDSCAPE CONTRACTOR SHALL FURNISH ALL MATERIALS AND PERFORM ALL WORK IN ACCORDANCE WITH THESE SPECIFICATIONS, APPROVED OR FINAL DRAWINGS, AND INSTRUCTIONS PROVIDED BY THE PROJECT LANDSCAPE DESIGNER... 2. THE LANDSCAPE CONTRACTOR SHALL PROVIDE MATERIALS AT LEAST FOURTEEN (14) DAYS IN ADVANCE OF THE ANTICIPATED DELIVERY DATE... 3. WORK MUST BE COMPLETED ONLY DURING WEATHER CONDITIONS FAVORABLE TO LANDSCAPE CONSTRUCTION AND TO THE HEALTH AND WELFARE OF PLANTS... 4. IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR, BEFORE ORDERING OR PURCHASING MATERIALS, TO PROVIDE SAMPLES OF THOSE MATERIALS TO THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL FOR APPROVAL... 5. UNLESS OTHERWISE AUTHORIZED BY THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL, THE LANDSCAPE CONTRACTOR SHALL PROVIDE MATERIALS AT LEAST FOURTEEN (14) DAYS IN ADVANCE OF THE ANTICIPATED DELIVERY DATE... 6. THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL RESERVES THE RIGHT TO INSPECT AND REJECT PLANTS AT ANY TIME AND AT ANY PLACE.

PROTECTION OF EXISTING VEGETATION NOTES

- 1. BEFORE COMMENCING WORK, ALL EXISTING VEGETATION WHICH COULD BE IMPACTED AS A RESULT OF THE PROPOSED CONSTRUCTION ACTIVITIES MUST BE PROTECTED FROM DAMAGE BY THE INSTALLATION OF THE PROPOSED PROTECTIVE FENCING... 2. BY SIGNING TO ADD DAMAGE TO ROOTS, BARK OR LEAVES, BRANCHES, OR VESICLES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 3. IN CASE INSTANCES WHERE EXCAVATING, TIE OR GRADING IS REQUIRED WITHIN THE DELINEATE OF TREES TO REMAIN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS...

SOIL PREPARATION AND MULCH NOTES

- 1. LANDSCAPE CONTRACTOR SHALL OBTAIN A SOIL TEST OF THE IMPROVEMENTS BY A CALIBRATED SOIL LABORATORY PRIOR TO PLANTING... 2. BASED ON THE TEST RESULTS, THE CONTRACTOR SHALL DETERMINE THE NUTRIENT DEFICIENCIES AND APPLY THE NECESSARY NUTRIENTS TO THE SOIL... 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF SOIL TESTS... 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF SOIL TESTS... 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF SOIL TESTS... 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF SOIL TESTS... 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF SOIL TESTS... 8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF SOIL TESTS... 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF SOIL TESTS... 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF SOIL TESTS...

IRRIGATION DURING ESTABLISHMENT

Table with 3 columns: PIPE AT PLANTING, IRRIGATION FOR VITALITY, IRRIGATION FOR SURVIVAL. Includes notes on irrigation frequency and duration.

TABLE NOTES

- 1. WHEN IRRIGATING FOR VITALITY, DELETE DATE AFTER TWO WEEKS FROM EACH TRUNK CALIPER MEASUREMENT... 2. WHEN IRRIGATING FOR SURVIVAL, TREES TAKE MUCH LONGER TO ESTABLISH THAN REGULARLY IRRIGATED TREES... 3. WHEN IRRIGATING FOR SURVIVAL, TREES TAKE MUCH LONGER TO ESTABLISH THAN REGULARLY IRRIGATED TREES... 4. WHEN IRRIGATING FOR SURVIVAL, TREES TAKE MUCH LONGER TO ESTABLISH THAN REGULARLY IRRIGATED TREES...

PLANT QUALITY AND HANDLING NOTES

- 1. ALL PLANT MATERIAL SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK (ANS Z60.1-2004) OR LATEST REVISION AS PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION... 2. IN ALL PLANTS, ROOTS SHALL BE KEPT UNHARMED WITHIN THE PROTECTION OF THE ROOT BALL... 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS...

PLANTING SCHEDULE

Table with 4 columns: MONTH, WEEK, PLANTING DATE, PLANTING DESCRIPTION. Lists planting dates for various plant types.

PLANTING SCHEDULE

- 1. THE FOLLOWING TREES ARE SUBJECT TO TRANSPLANT SHOCK AND SHALL NOT BE PLANTED DURING THE FALL SEASON... 2. THE FOLLOWING TREES ARE SUBJECT TO TRANSPLANT SHOCK AND SHALL NOT BE PLANTED DURING THE FALL SEASON... 3. THE FOLLOWING TREES ARE SUBJECT TO TRANSPLANT SHOCK AND SHALL NOT BE PLANTED DURING THE FALL SEASON... 4. THE FOLLOWING TREES ARE SUBJECT TO TRANSPLANT SHOCK AND SHALL NOT BE PLANTED DURING THE FALL SEASON... 5. THE FOLLOWING TREES ARE SUBJECT TO TRANSPLANT SHOCK AND SHALL NOT BE PLANTED DURING THE FALL SEASON...

PLANT MATERIAL GUARANTEE NOTES

- 1. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR... 2. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 3. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 4. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 5. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS...

LAWN (SEED OR SOIL) NOTES

- 1. SEED AND MULCH SHALL BE FRESH, CLEAN, NEW AND TESTED. SOIL SHALL BE STRONGLY ROOTED, UNIFORM IN THICKNESS, AND FREE OF WEEDS, DISEASE, AND INSECTS... 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS... 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPAIRS...

Approval table with columns: APPROVAL, DATE, NAME, TITLE, ORGANIZATION. Includes approvals for Special Land Use and Final Approval.

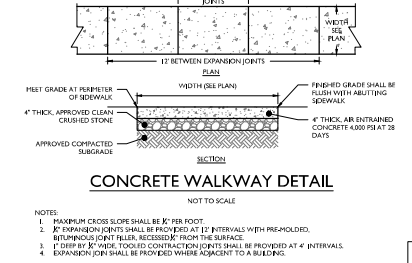
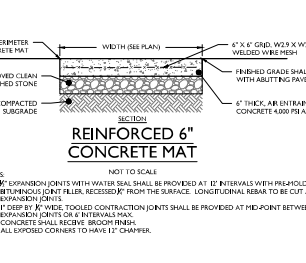
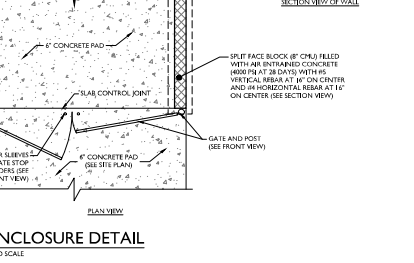
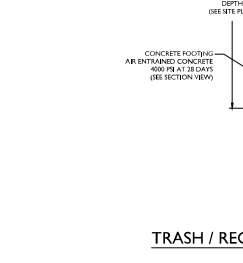
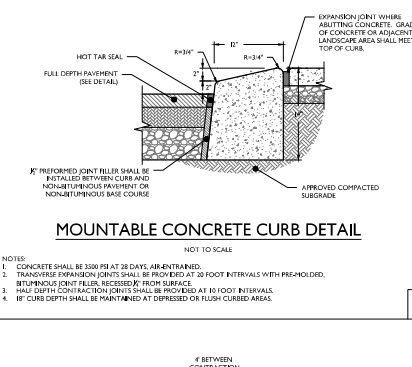
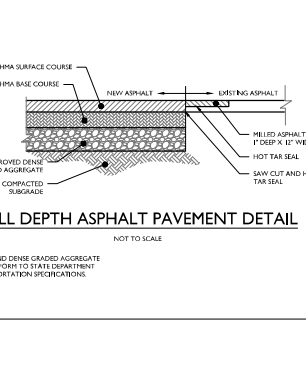
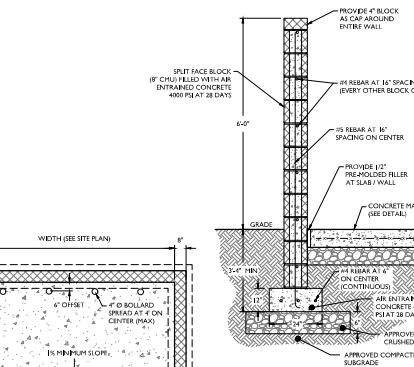
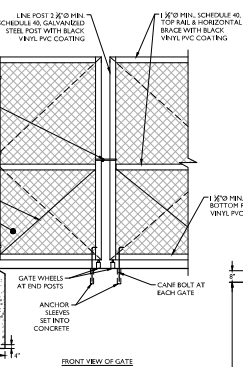
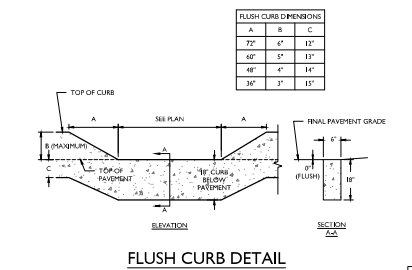
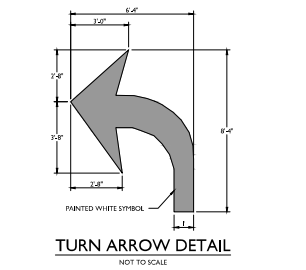
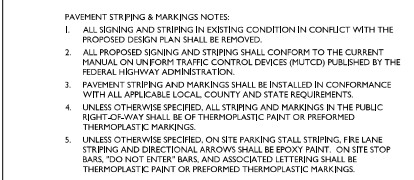
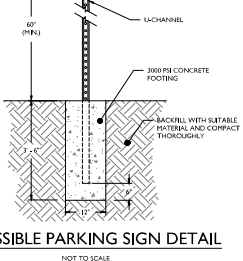
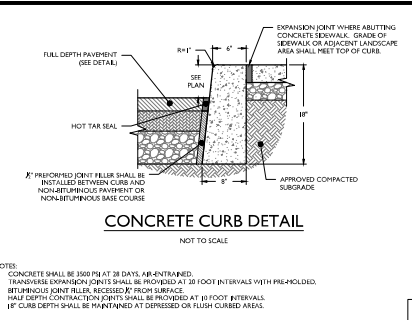
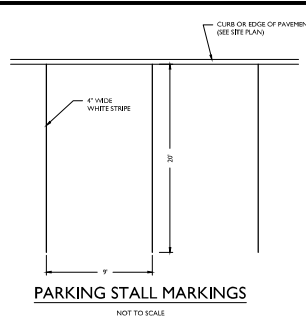
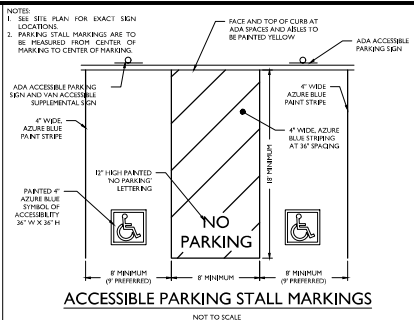
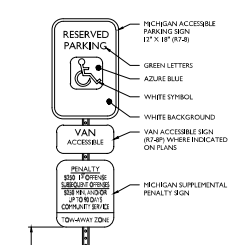
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NO.	DATE	ISSUE
3	08/19/2023	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
2	08/19/2023	FOR SITE PLAN / SPECIAL LAND USE APPROVAL
1	08/19/2023	FOR SITE PLAN / SPECIAL LAND USE APPROVAL

SITE DEVELOPMENT PLANS

MUG & JUG

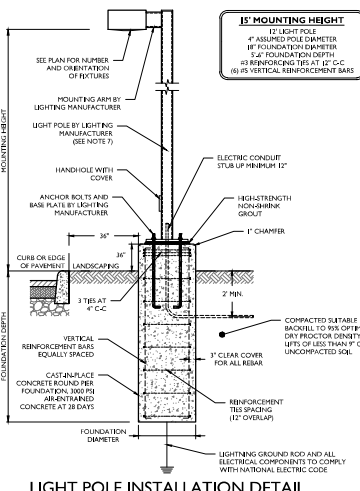
PROPOSED COMMERCIAL REDEVELOPMENT

PARCEL ID: 240735809, 240735808, & 240735840
CITY OF BURLY, MICHIGAN
OSHLING COUNTY, MICHIGAN

STONEFIELD
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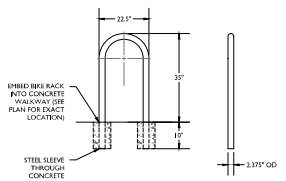
SCALE: AS SHOWN PROJECT ID: DET2403M
TITLE: CONSTRUCTION DETAILS
DRAWING: C-10

1. ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED SHALL BE IN FEET AND INCHES. DIMENSIONS SHALL BE TO FACE UNLESS OTHERWISE SPECIFIED.
 2. ALL MATERIALS SHALL BE AS SPECIFIED IN THE NOTES.
 3. ALL MATERIALS SHALL BE AS SPECIFIED IN THE NOTES.
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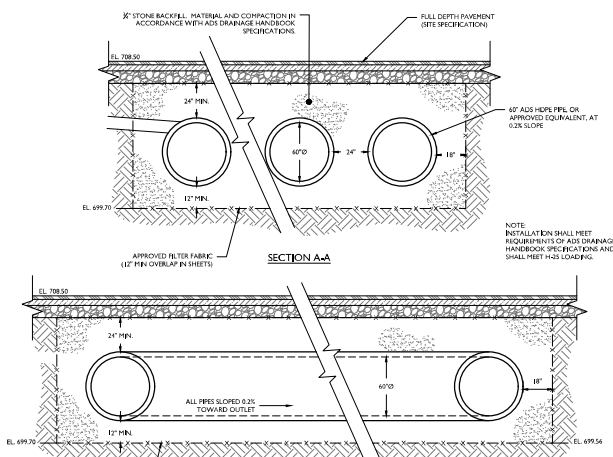
LIGHT POLE INSTALLATION DETAIL

- NOTES:
1. MINIMUM SOIL BEARING RESISTANCE OF 1500 PSF. SOIL INJECTION ANGLE OF 70 DEGREES, AND SOIL DRY UNIT WEIGHT OF 120 PCF SHALL BE CONFIRMED IN THE FIELD BY A QUALIFIED PROFESSIONAL.
 2. CAST-IN-PLACE CONCRETE SHALL BE CONSOLIDATED USING VIBRATOR.
 3. PRE-CAST PILES ACCEPTABLE UPON WRITTEN APPROVAL OF SHOP DRAWINGS BY ENGINEER.
 4. CONCRETE TO BE INSTALLED A MINIMUM OF 7 DAYS PRIOR TO INSTALLING LIGHT POLE. Poured concrete mix REQUIRED TO GET AN 80% DESIGN STRENGTH PRIOR TO INSTALLING LIGHT POLE.
 5. CONCRETE SHALL HAVE A MAXIMUM SLUMP OF 4" (WITHIN 1" TOLERANCE).
 6. POLE SHALL BE ERECTED FOR 10 MPH HIGHER THAN HURRICANE WIND SPEED 3FT ABOVE GROUND FOR THE AREA BASED ON ANCHORAGE TABLE.
 7. POLE TO BE TERMINATED AT A KINK.
 8. WORK SHALL CONFORM TO ACCEPTED PRACTICES FOR APPROPRIATE TEMPERATURE AND WEATHER CONDITIONS.
 9. CONTRACTOR TO TEMPORARILY SUPPORT ADJACENT SOIL AND STRUCTURES DURING EXCAVATION IF REQUIRED.



HOOP RACK HD IN GROUND MOUNTED BIKE RACK DETAIL

- NOTES:
1. BIKE RACK TO BE MANUFACTURED BY DIDD BIKE RACKS OR APPROVED EQUAL.
 2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.



UNDERGROUND BASIN DETAIL

- NOTES:
1. INSTALLATION SHALL MEET REQUIREMENTS OF ASSESSMENT HANDBOOK SPECIFICATIONS AND SHALL MEET ULS LOADINGS.
 2. CONTRACTOR REQUIRED TO PROVIDE ALL MAIN COMPONENTS INCLUDING ANY PIPE HEADERS, FITTINGS, REDUCERS, WYES, AND INSPECTION PORTS.

NO.	DATE	ISSUE	DESCRIPTION
1	08/18/22	FOR SITE PLAN / SPECIAL LAND USE APPROVAL	
2	08/18/22	FOR SITE PLAN / SPECIAL LAND USE APPROVAL	
3	08/23/22	FOR SITE PLAN / SPECIAL LAND USE APPROVAL	

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SITE DEVELOPMENT PLANS

MUG & JUG

PROPOSED COMMERCIAL REDEVELOPMENT

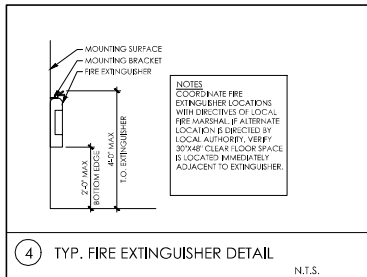
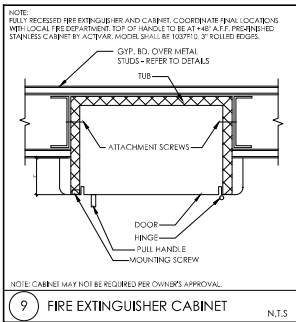
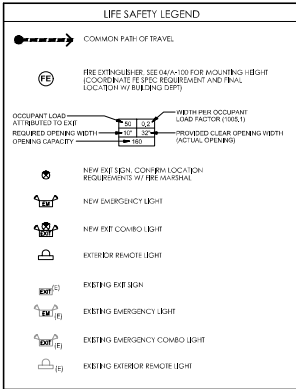
PARCEL ID: 210735509, 210735508, & 210735540
CITY OF BERKLEY
OAKLAND COUNTY, MICHIGAN



SCALE: AS SHOWN PROJECT ID: DET-3434M

TITLE: CONSTRUCTION DETAILS

DRAWING: C-II



KEYED NOTES

1. ALL FIRE EXTINGUISHERS SHALL BE MOUNTED BY LOCAL CODES. WHEN MOUNTING ADJACENT TO DOOR OPENING, MAINTAIN 12" CLEAR TO DOOR OPENING FOR DOOR OPERATION. FINAL LOCATION, MOUNTING HEIGHT, & CARRIER BY FIRE INSPECTOR - C.G. TO VERIFY FIRE MARSHAL REQUIREMENTS FOR INSPECTION & TAGGING. REFER TO FIRE EXTINGUISHER CABINET DETAIL 99 AND 1100 FOR DETAILS. FOR ADDITIONAL INFORMATION, DO NOT EXCEED 75% OF TRAVEL ALONG EXITS FROM AREAS.

KEYED NOTE

A. MIN. 4" PART OF EGRESS SHALL BE UNOBSTRUCTED AT ALL TIMES.

ACCESSIBILITY PLAN NOTES:

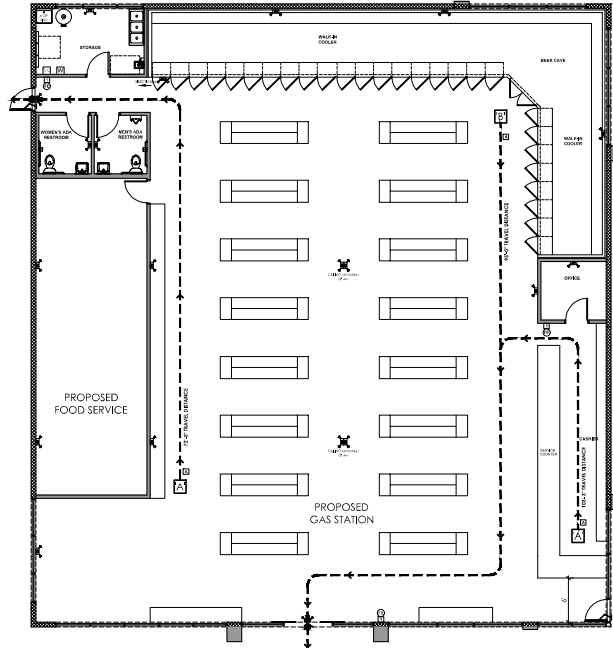
- AT LEAST 95% OF ALL FIXED SEATING OF TABLES IN A PUBLIC SPACE SHALL COMPLY WITH BUILDING CODE.
- ABLES SHALL HAVE A MINIMUM CLEAR WIDTH OF 44 INCHES.
- SERVICE COUNTER SHALL BE ACCESSIBLE.

ACCESSIBILITY PLAN LEGEND:

MIN. 4" WIDE CLEAR ACCESSIBLE PASSAGE WAY.

TYPICAL CLEAR WHITE CHAIR FLOOR SPACE WHERE REQUIRED.

EGRESS PATHS	
EXIT PATH	EXIT PATH DISTANCE
A	TOTAL PATH LENGTH - 105'0"
B	TOTAL PATH LENGTH - 85'0"
C	TOTAL PATH LENGTH - 122'0"



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189 E. BIG BEAVER ROAD
SUITE 200
TROY, MICHIGAN 48063
P. 248-254-3834
W.ABRODESIGNGROUP.COM

PROJECT:
MUG & JUG GAS STATION

- BUILDING SHELL & INTERIORS -

4162 TWELVE MILE ROAD,
BERKLEY, MI. 48072

SHEET TITLE:
LIFE SAFETY AND EGRESS PLAN

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DATE: 03.20.25
ISSUE: 5/1A

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north

LIFE SAFETY AND EGRESS PLAN

SCALE: 1/8" = 1'-0"

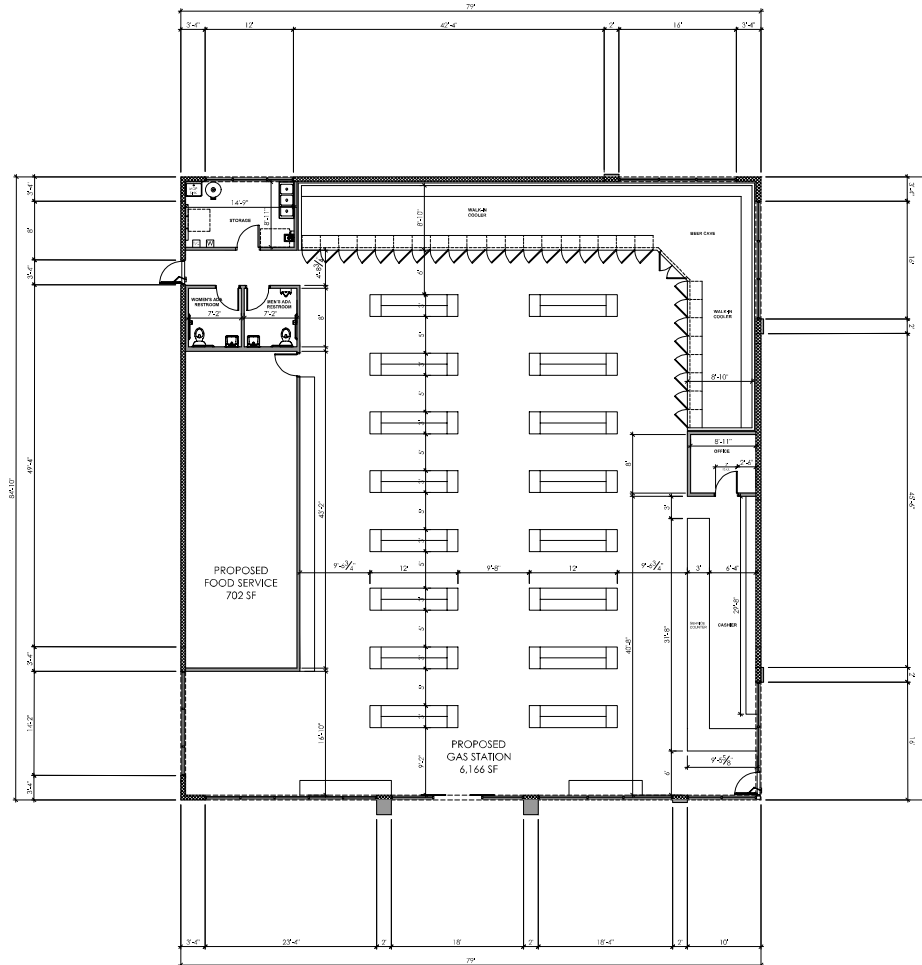
0 2 4 8 16

PROJECT NO: 091724

SHEET NO: A-0.1

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FLOOR PLAN KEY NOTES:	
1	4" H. BURNED RED C-BLOCK EXTERIOR STRUCTURAL WALL - 12" D.
2	CLEAR INSULATED GLASS IN BLACK ANODIZED ALUMINUM FRAME ENTRY DOOR.
3	CLEAR INSULATED GLASS IN BLACK ANODIZED ALUMINUM FRAME STOREFRONT CURTAIN WALL SYSTEM.
4	NOT USED.



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GAS STATION

- BUILDING SHELL & INTERIORS -
4162 TWELVE MILE ROAD,
BERKLEY, MI. 48072

SHEET TITLE:
FLOOR PLAN

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DATE: 03.20.25
ISSUE: 5FA

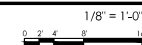
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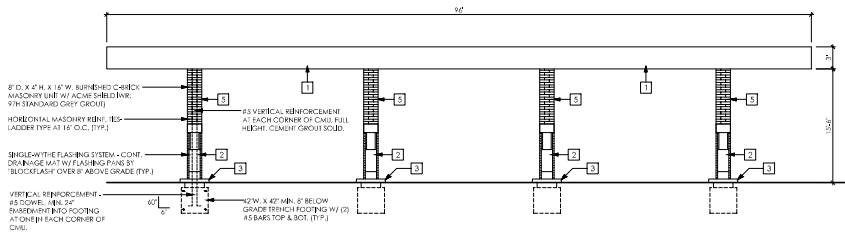
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A-1.1



FLOOR PLAN
SCALE:

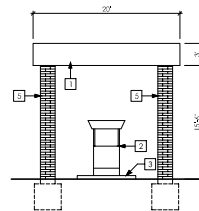


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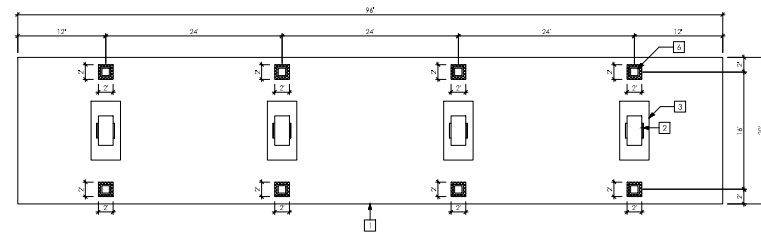


EAST AND WEST ELEVATION AT PUMP CANOPY
SCALE: 1/8" = 1'-0"

PUMP CANOPY KEY NOTES:	
1	CANOPY OVERHANG, AIRWORK/BRACING BY OTHERS. OWNER WILL PROVIDE. VENDOR WILL PROVIDE THEIR OWN STRUCTURAL COLUMNS AND FOOTINGS AS THIS IS NOT PART OF THESE PLANS.
2	GAS PUMPS BY OTHERS.
3	CURT AT PUMP BY OTHERS.
4	STRUCTURAL STEEL BUILDING COLUMN.
5	8\"/>
6	VENDOR WILL PROVIDE THEIR OWN STRUCTURAL COLUMNS AND FOOTINGS AS THIS IS NOT PART OF THESE PLANS. PLAN HAS BEEN DESIGNED TO BE 12\"/>



NORTH AND SOUTH ELEVATION AT PUMP CANOPY
SCALE: 1/8" = 1'-0"



GAS PUMP CANOPY PLAN

SCALE:

1/8" = 1'-0"



GLAZING SYMBOL KEY:	
TRANSPARENT GLAZING:	
TINTED SPANDREL GLASS:	



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PROJECT:
MUG & JUG
GAS STATION

- BUILDING SHELL & INTERIORS -

4162 TWELVE MILE ROAD,
BERKLEY, MI. 48072

SHEET TITLE:
EXTERIOR
BUILDING
ELEVATIONS -
GLAZING
CALCULATIONS

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DATE: 03.20.25

ISSUE: SFA

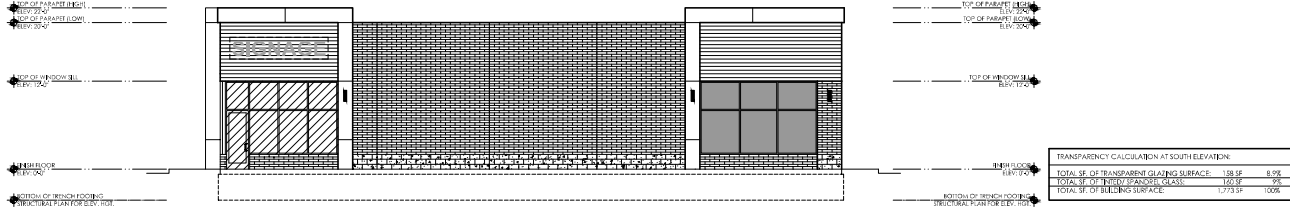
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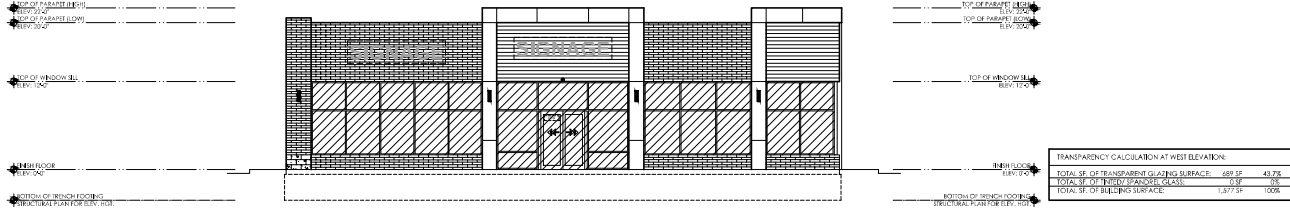
091724

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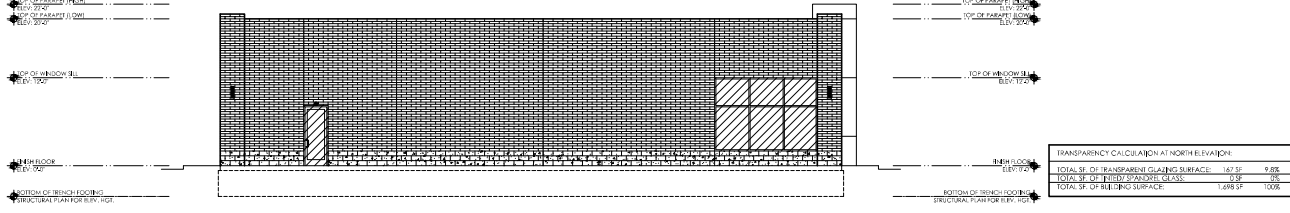
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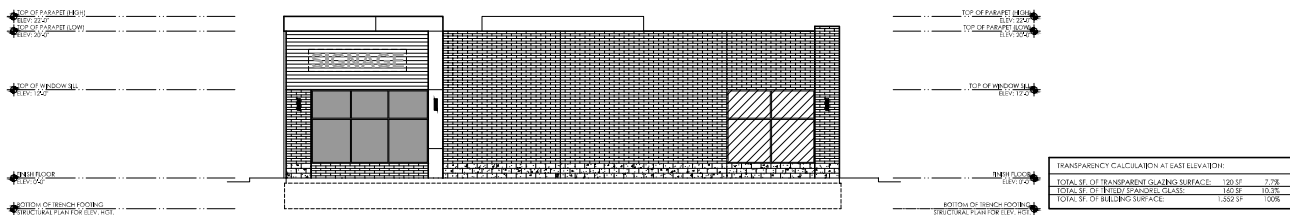
SOUTH ELEVATION (12 MILE ROAD VIEW)
SCALE: 1/8" = 1'-0"



WEST ELEVATION (GREENFIELD ROAD VIEW)
SCALE: 1/8" = 1'-0"



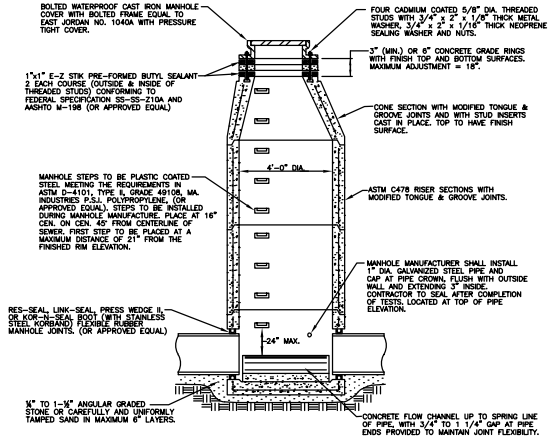
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SCALE: 1/8" = 1'-0"



EAST ELEVATION
SCALE: 1/8" = 1'-0"

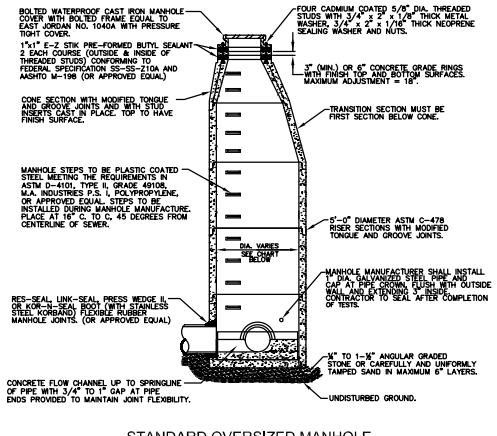
SANITARY SEWER CONSTRUCTION NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE LOCAL UNIT OF GOVERNMENT AND THE WATER RESOURCES COMMISSIONER (WRC). ALL SANITARY SEWER CONSTRUCTION SHALL HAVE FULL-TIME INSPECTION SUPERVISED BY A STATE OF MICHIGAN LICENSED PROFESSIONAL ENGINEER PROVIDED BY, OR CAUSED TO BE PROVIDED BY, THE LOCAL UNIT OF GOVERNMENT.
2. AT ALL CONNECTIONS TO WRC SEWERS OR EXTENSIONS, AND BEFORE START OF CONSTRUCTION, THE CONTRACTOR MUST OBTAIN A SENIOR INSPECTION PERMIT ISSUED BY WRC. GRAVITY SEWER PERMIT CHARGES ARE \$250 FOR EACH CONNECTION PLUS \$25 FOR EACH MANHOLE CONSTRUCTED. PRESSURE SEWER PERMIT CHARGES ARE \$250 PER 2460 L.F. OF FORCE MAIN WITH A MINIMUM PERMIT FEE OF \$250. FAILURE TO PASS ANY TEST SEGMENT WILL RESULT IN AN ADDITIONAL CHARGE TO THE CONTRACTOR FOR EACH RETEST. IN ACCORDANCE WITH THE ABOVE PRICE SCHEDULE, THE CONTRACTOR SHALL ALSO HAVE POSTED WITH WRC A \$5000 SURETY BOND AND \$500 CASH DEPOSIT. THE CONTRACTOR SHALL NOTIFY THE LOCAL UNIT OF GOVERNMENT AND WRC (248-858-1105) 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. FINAL ACCEPTANCE TESTS MUST BE WITNESSED BY COUNTY PERSONNEL AND MUST BE SCHEDULED BY MUNICIPALITY OR ITS CONSULTANT IN ADVANCE WITH 24 HOUR NOTICE AT 248-858-1105.
3. NO SEWER INSTALLATION SHALL HAVE AN INFILTRATION EXCEEDING 100 GALLONS PER INCH DIAMETER PER MILE OF PIPE IN A 24 HOUR PERIOD, AND NO SINGLE RUN OF SEWER BETWEEN MANHOLES SHALL EXCEED 100 GALLONS PER INCH DIAMETER PER MILE. AIR TESTS IN LIEU OF INFILTRATION TESTS SHALL BE AS SPECIFIED IN THE WATER RESOURCES COMMISSIONER STANDARDS. ONLY PIPE AND PIPE JOINTS APPROVED BY WRC MAY BE USED FOR SANITARY SEWER CONSTRUCTION.
4. LOCATED IN THE FIRST MANHOLE UPSTREAM FROM THE POINT OF ALL CONNECTIONS TO AN EXISTING WRC SEWER OR EXTENSION THERETO, A TEMPORARY 12-INCH DEEP SLUMP SHALL BE PROVIDED IN THE FIRST MANHOLE ABOVE THE CONNECTION WHICH WILL BE FILLED IN AFTER SUCCESSFUL COMPLETION OF ANY ACCEPTANCE TEST UP TO THE STANDARD FILLET PROVIDED FOR THE FLOW CHANNEL. A WATER-TIGHT BULDOZER SHALL BE PROVIDED ON THE DOWNSTREAM SIDE OF THE SLUMP MANHOLE.
4. AT ALL TIMES WHEN LAYING OF NEW PIPE IS NOT ACTUALLY IN PROGRESS, THE UPSTREAM OPEN END OF THE PIPE SHALL BE CLOSED BY TEMPORARY WATER-TIGHT PLUGS OR BY OTHER APPROVED MEANS. IF WATER IS IN THE TRENCH WHEN WORK IS RESUMED, THE PLUG SHALL NOT BE REMOVED UNTIL THE DANGER OF WATER ENTERING THE PIPE HAS PASSED.
6. ALL BUILDING LEADS AND RISERS SHALL BE SIX INCH NOD 23.5 ABS PIPE WITH CHEMICALLY FINISHED JOINTS OR AN APPROVED EQUAL PIPE AND JOINT. BUILDING LEADS TO BE FURNISHED WITH REMOVABLE ANTIFIT AND WATER-TIGHT STOPPERS.
7. ALL RIGID SEWER PIPE SHALL BE INSTALLED IN CLASS "B" BEDDING OR BETTER. ALL FLEXIBLE, SEMI-FLEXIBLE, OR COMPOSITE SEWER PIPE SHALL BE INSTALLED IN CONFORMANCE TO WRC SPECIFICATIONS.
8. ALL NEW MANHOLES SHALL HAVE WRC APPROVED FLEXIBLE, WATER-TIGHT SEALS WHERE PIPES PASS THROUGH WALLS. MANHOLES SHALL BE OF PRE-CAST SECTIONS WITH MODIFIED GROOVE TONGUE AND RUBBER GASKET TYPE JOINTS. PRE-CAST MANHOLE CONE SECTIONS SHALL BE WRC APPROVED MODIFIED ECCENTRIC CONE TYPE. ALL MANHOLES SHALL BE PROVIDED WITH BOLTED, WATER-TIGHT COVERS.
9. AT ALL CONNECTIONS TO MANHOLES ON WRC SEWERS, OR EXTENSIONS THERETO, DROP CONNECTIONS WILL BE REQUIRED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS 18 INCHES.
10. TAPS TO EXISTING MANHOLES SHALL BE MADE BY CORING. THE CONTRACTOR SHALL PLACE A KOR-N-SEAL BOOT (OR WRC APPROVED EQUAL) AFTER CORING IS COMPLETED. BLIND DRILLING WILL ONLY BE PERMITTED IN LIEU OF CORING WITH PRIOR WRC APPROVAL.
11. MANHOLES CONSTRUCTED DIRECTLY ON WRC SEWERS SHALL BE PROVIDED WITH COVERS READING "WATER RESOURCES COMMISSIONER-SANITARY" IN RAISED LETTERS.
12. NO GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWN SPOUT DRAINAGE OR WEEP TILE DRAINAGE SHALL BE ALLOWED TO ENTER ANY SANITARY SEWER INSTALLATION.
13. PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL TELEPHONE MISS DIG (800-482-7171) FOR THE LOCATION OF UNDERGROUND PIPELINE AND CABLE FACILITIES AND SHALL ALSO NOTIFY REPRESENTATIVES OF OTHER UTILITIES LOCATED IN THE VICINITY OF THE WORK.
14. AN 18 INCH MINIMUM VERTICAL SEPARATION AND A 10 FOOT MINIMUM HORIZONTAL SEPARATION MUST BE MAINTAINED BETWEEN SANITARY SEWER AND WATER MAIN.
15. NEW MANHOLES BUILT OVER AN EXISTING SANITARY SEWER SHALL HAVE MONOLITHIC POURED BOTTOMS.
16. IF THE STRUCTURE FALLS WITHIN THE ROADWAY OF A GRAVEL ROAD OR WITHIN THE UNPAVED SHOULDER OF A PAVED ROAD, THE COVER SHALL BE SIX (6") INCHES BELOW THE FINISHED GRAVEL SURFACE.



STANDARD MANHOLE

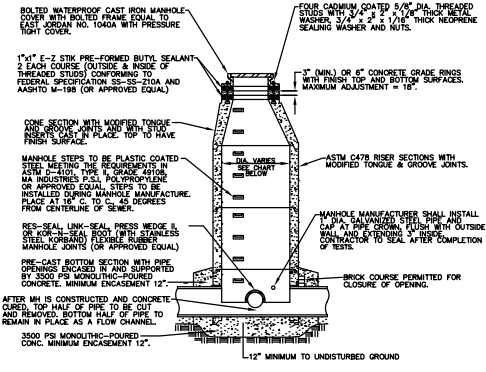
MAX. PIPE SIZE FOR STRAIGHT TANK INSTALLATION	MAX. PIPE SIZE FOR RIGHT ANGLE INSTALLATION
24"	18"



STANDARD OVERSIZED MANHOLE

MANHOLE SIZING CHART

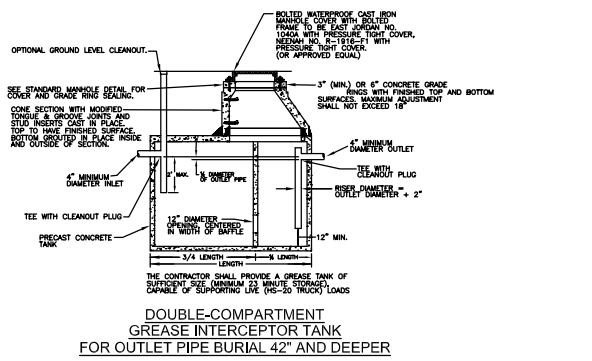
MANHOLE DIAMETER	MAX. PIPE SIZE FOR STRAIGHT TANK INSTALLATION	MAX. PIPE SIZE FOR RIGHT ANGLE INSTALLATION
5"	36"	24"
6"	42"	36"
7"	60"	42"



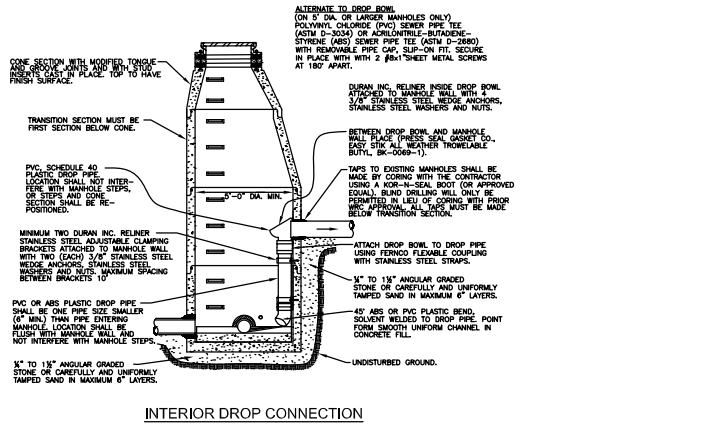
MANHOLE CONSTRUCTED OVER EXISTING SEWER

MANHOLE SIZING CHART

MANHOLE DIAMETER	TANK PIPE SIZE FOR STRAIGHT TANK INST.
4"	24"
5"	36"
6"	42"
7"	60"



DOUBLE-COMPARTMENT GREASE INTERCEPT TANK FOR OUTLET PIPE BURIAL 42" AND DEEPER



INTERIOR DROP CONNECTION

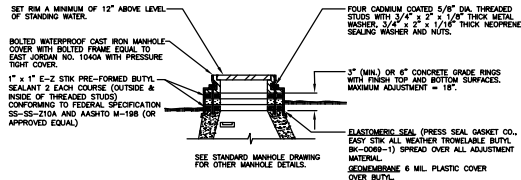
REVISION BLOCK

Rev.	By	Rev.	Description
1	WRC	08/21/02	ISSUED STANDARD MONOLITHIC MANHOLE
2	WRC	08/21/02	ADDED BOLT THROUGH ADVANCED APPROVAL BY WRC AND UPDATE PHONE NUMBER
3	WRC	08/21/02	ADDED BOLT THROUGH ADVANCED APPROVAL BY WRC AND UPDATE PHONE NUMBER
4	WRC	08/21/02	REMOVED EXTERIOR DROP CONNECTION DETAIL

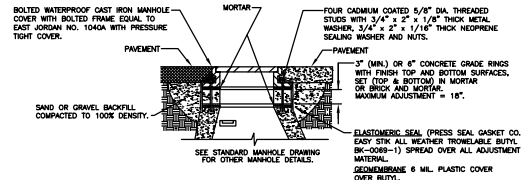
SANITARY SEWER DETAILS AND NOTES

ORIG. DATE:	08/21/02		ONE PUBLIC WORKS DRIVE, BLDG 56 WEST WATERFORD, MICHIGAN 48308-1907
SCALE:	NO SCALE		SHEET NO.:
DESIGNED BY:	WRC		
DRAWN BY:	WRC Mapping		

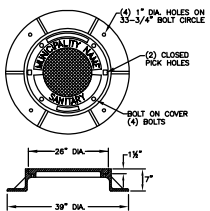
MANHOLE RIM ADJUSTMENT CHART	
MANHOLE LOCATION	SET RIM ELEVATION
ON	12" ABOVE FINISH GRADE
ROAD PLAN	12" ABOVE STANDING WATER
GRAVEL ROAD / SHOULDER	6" BELOW FINISH GRADE
PAVEMENT / GREENBELT	FLUSH WITH FINISH GRADE



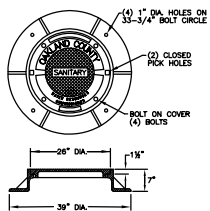
ADJUSTMENT DETAIL FOR MANHOLE TOPS WITHIN FLOOD PRONE AREAS



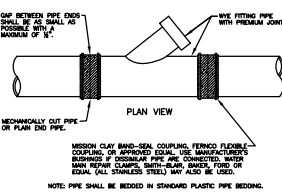
ADJUSTMENT DETAIL MANHOLE TOPS WITHIN PAVEMENT AREAS



LOCAL MUNICIPALITIES MANHOLE COVER



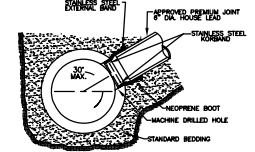
W.R.C. LETTERED MANHOLE COVER



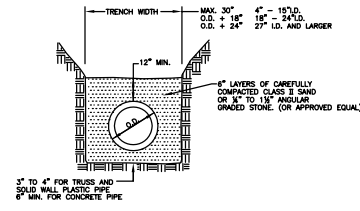
WYE PIPE INSERTION WITH FLEXIBLE COUPLINGS (RIGID PIPE)

WATER RESOURCES COMMISSIONER GRAVITY BUILDING LEAD REQUIREMENTS AND DETAILS

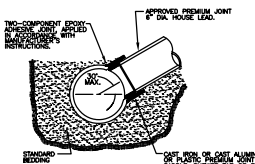
- ALL BUILDING LEAD WORK MUST BE PERFORMED UNDER WATER RESOURCES COMMISSIONER (WRC) AND/OR LOCAL UNIT OF GOVERNMENT INSPECTION.
- FOR ALL WRC-OPERATED SYSTEMS, CALL 248-866-1110 24-HOURS IN ADVANCE OR WORK TO SCHEDULE INSPECTION.
- NO SANITARY SEWER MAY BE USED AS A CLEANOUT OF DEWATERING OUTLET.
- WHERE AN EXISTING BUILDING LEAD IS BEING EXTENDED, DISSIMILAR TYPES AND SIZES OF PIPE SHALL BE JOINED USING AN WRC APPROVED ADAPTER.
- APPROVED BUILDING LEAD PIPE FOR GRAVITY SEWER LEADS:
 - ABS PLASTIC ASTM D2031, SDR 25.5.
 - PVC PLASTIC ASTM D2334, SDR 23.5 OR ASTM D2082, SCHEDULE 40.
 - DUCTILE IRON PIPE AMERICAN WATER WORKS ASSOCIATION (AWWA) C-104/A21.4, CLASS 84. JOINTS SHALL BE SUPER BEL TITE, TYTON, TY-SEAL, MULTI-TITE, DUAL-TITE, OR VOR-TITE.
 - ANY DEVIATIONS FROM SPECIFIED ABOVE REQUIRE APPROVAL BY WRC.
- ALLOWABLE TYPES OF SEWER PIPE ADAPTERS:
 - FERROCO ADAPTER/REDUCE UNITS.
 - FERROCO FLEXIBLE COUPLING.
 - MISSION CLAY BAND-SEAL COUPLING.
 - SMITH-BEAR STAINLESS STEEL REPAIR CLAMP.
 - HANLON-DEITZ GEAR SHIP ADAPTER.
 - PLANT FABRICATED JOINT CONVERSION PIPE.



KOR-TEE TAP FOR CONCRETE PIPE

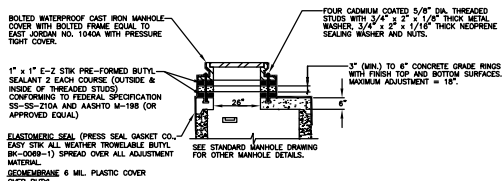


STANDARD BEDDING (CLASS B)

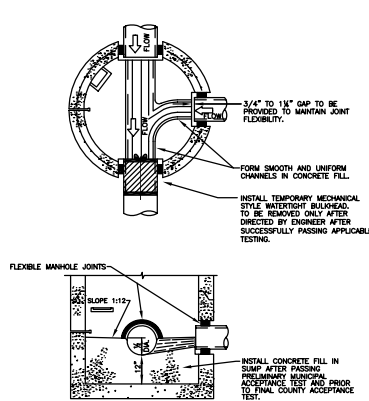


SEWER TAP-ALL SIZES OF MAIN SEWER PIPES VITRIFIED CLAY

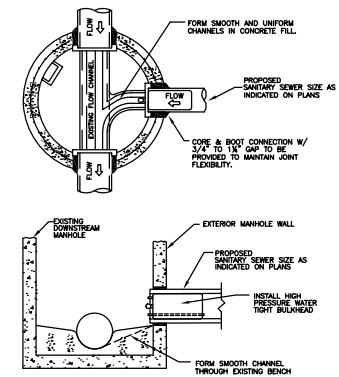
NOTE: SURFACE OF MAIN SEWER SHALL BE CLEANED WITH AN ABRASIVE ORDERER PRIOR TO TAP. APPROVED PREMIUM JOINT FOR HOUSE LEAD.



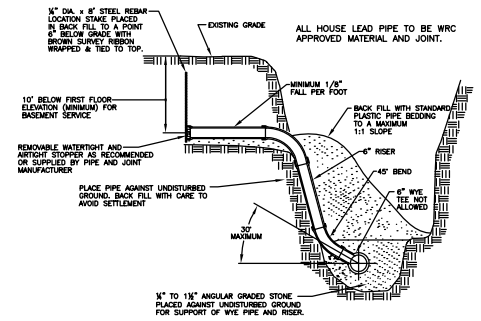
FLAT TOP MANHOLE



SUMP MANHOLE FOR TESTING, CLEANING AND DEWATERING



TESTING BULKHEAD WITH PIPE TAP

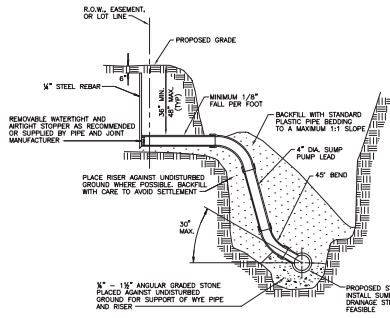


HOUSE LEAD DETAIL

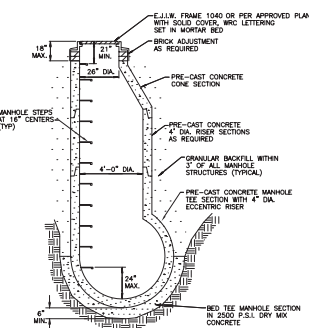
REVISION BLOCK	
Part No.	Source Date: 06/11
Rev.	Rev.
1	ISSUE
2	ISSUE
3	ISSUE
4	ISSUE
5	ISSUE

SANITARY SEWER DETAILS AND NOTES

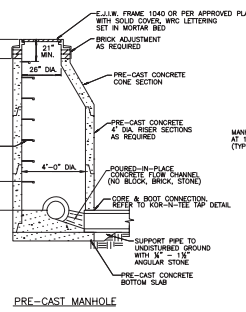
ORIG. DATE:	05-09-03		ONE PUBLIC WORKS DRIVE, BLDG 95 WEST WATERFORD, MICHIGAN 48328-1907
SCALE:	NO SCALE		
DESIGNED BY:	MWD		SHEET NO. 2 of 2
DRAWN BY:	Mapping Staff		



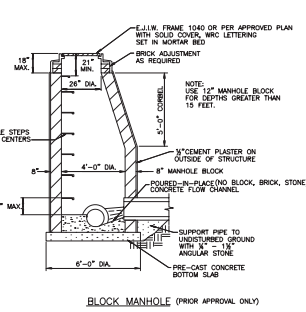
HOUSE LEAD DETAIL FOR 4" DIA. PLASTIC SUMP PUMP LEADS
NO SCALE



PRE-CAST TEE MANHOLE DETAIL
NO SCALE

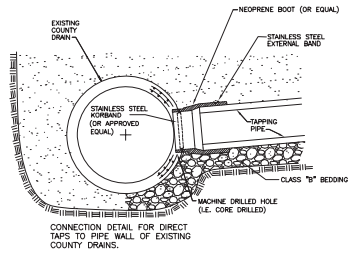


PRE-CAST MANHOLE



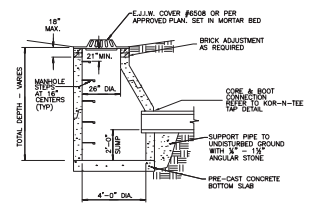
BLOCK MANHOLE (PRIOR APPROVAL ONLY)

STANDARD MANHOLE DETAILS
NO SCALE

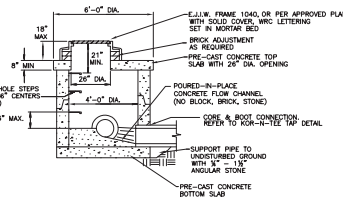


KOR-N-TEE TAP (OR APPROVED EQUAL)
NO SCALE

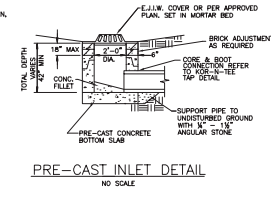
- * For non-concrete to concrete ties.
- * Use (see-see), A-lock or approved equal for concrete to concrete ties.



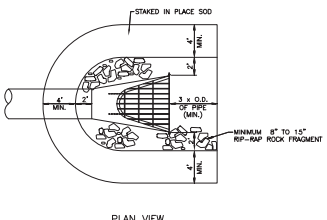
PRE-CAST CATCH BASIN DETAIL
NO SCALE



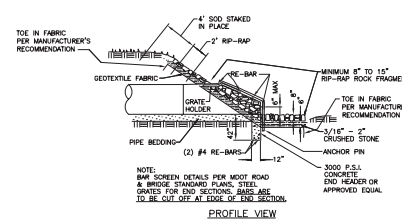
PRE-CAST LOW HEAD MANHOLE DETAIL
NO SCALE (PRIOR APPROVAL ONLY)



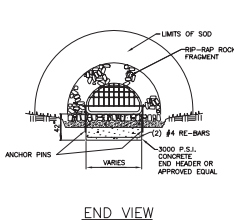
PRE-CAST INLET DETAIL
NO SCALE



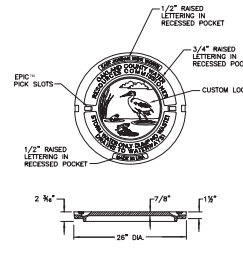
PLAN VIEW



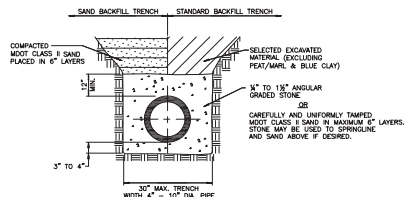
END SECTION AND BAR SCREEN DETAIL
NO SCALE



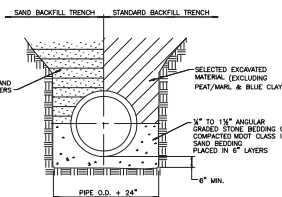
END VIEW



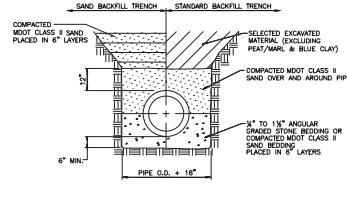
LETTERED MANHOLE COVER FOR WRC
NO SCALE



ABS (TRUSS AND SOLID WALL), PVC (TRUSS, SOLID WALL, A2000), ADS N-12 WT PIPE BEDDING DETAIL
NO SCALE



CLASS "B" BEDDING TRENCH DETAIL FOR 27" DIAMETER AND LARGER CONCRETE PIPE
NO SCALE



CLASS "B" BEDDING TRENCH DETAIL FOR 24" DIAMETER AND SMALLER CONCRETE PIPE
NO SCALE

PRECAST CONCRETE TOP SLAB DETAIL

GENERAL NOTES

- Type and class of pipe shall be as specified on plans.
- Class "B" bedding shall be used throughout, unless otherwise specified on the plans.
- All end sections 18" and larger shall be provided with a bar screen unless otherwise approved.
- Standard rip-rap shall be 8"-15" fragmented rock, heavy rip-rap shall be 15"-24" fragmented rock. (No Broken Concrete)
- MANHOLE REQUIREMENTS:
 - All new catch basins, inlets, and manholes are to be manufactured to ASTM C-478 specifications.
 - All new catch basins and manholes shall have WRC approved flexible, watertight seats where pipes pass through walls. Manholes shall be of precast sections with modified groove tongue and rubber gasket type joints. Pre cast manhole cone sections shall be WRC approved modified eccentric cone type.
 - Top to bottom manhole joints or cone sections are prohibited unless otherwise approved.
 - Manhole steps to be plastic coated steel meeting the requirements in ASTM D 2146, Type A Grade 4910B, MA, Industries P.S.I. Polypropylene, (or approved equal). Steps to be installed during manhole manufacture. Place at 16" centers 45' from centerline of sewer.
 - Cone section with modified groove tongue joints and stud inserts cast in place. Top to have flush surface.
 - ASTM C-478 riser section with modified groove tongue joints.
 - Rise-lead, lift-lead, press wedge fit, or top-lead boot (with stainless steel kerf) flexible rubber manhole joints. (or approved equal).
 - The inside joints of manholes, catch basins, and pipe sizes over 42" and larger in diameter shall be pointed up with mortar upon completion of backfilling.
- CONCRETE PIPE REQUIREMENTS:
 - Concrete pipe to be per ASTM C78 standards.
 - It will be required to TV all pipe 30 days after installation.
 - The contractor shall provide modified groove tongue joints as specified on the plans.
 - All reinforced concrete pipe shall have modified groove tongue joints with O-ring type rubber gasket, per A.S.T.M. specifications C443.
 - The inside joints of manholes, catch basins, and pipe sizes over 42" and larger in diameter shall be pointed up with mortar upon completion of backfilling.
- SUMP PUMP LEAD REQUIREMENTS:
 - All sump pump leads connected to a County Drain pipe shall be pre-manufactured.
 - Sump pump leads connected to a manhole shall be cored and booted. Refer to Kor-N-TEE Top Detail.
 - Sump pump mains and leads shall be ADS (1/2" and 3/4" wall), P.C. Drain, solid wall, A2000, ADS N-12 WT with premium joints.
 - Ends of all 4" sump pump leads shall be temporarily capped and their location staked, witnessed and recorded.
 - All sump pump leads to be taken to the property line, easement line or as indicated on the plan.
 - Sump pump mains must have a clearance with a minimum inside diameter of 24" and be constructed of changes of alignment, ends of sump pump mains or as indicated on the plan.
- RESTORATION REQUIREMENTS:
 - All disturbed area within the County Drain right-of-way shall be restored on the following:
 - Under roads, sidewalks, driveways and parking areas, backfill material shall be placed loosely into trenches in six (6) inch layers with each layer compacted to not less than 90% of maximum dry density as determined by the ASTM D 1557 Compaction Standard (modified proctor compaction test). All other areas shall have each layer compacted to not less than 90% of maximum dry density.
 - Finish subgrade
 - Place 3" thickness clean topsoil acceptable to the engineer to attain finished grade. Topsoil must not be contaminated and may not be a mixture of natural underlying soils, subbase materials, or other materials. It must consist of natural loam, sandy loam, silt loam or clay loam humus-bearing soil adapted to the surveillance of plant life. Topsoil must be neither excessively acidic nor excessively alkaline. It must be of mineral origin, exclusive of any peat or muck.
 - Apply seed and fertilizer as follows:

Location	Seeding Requirements	Fertilizer Requirement
Slopes and Ditch	M.D.O.T. "Roadside Mix" Turf Seed Mixture TM	M.D.O.T. Seeding and Soding
Banks, Etc.	Parental Ryw, 50% Hard Fescue, 40% Creeping Red Fescue) applied at 220 lb/acre	Parental Ryw, 50% Hard Fescue, 40% Creeping Red Fescue) applied at 220 lb/acre
 - Soil is required in maintained lawn areas. Refer to WRC General Specifications for additional requirements and information.
 - Apply straw or marsh hay mulch in an air-dry condition to all seeded areas over the surface to a uniform thickness of 2.0m/care.
 - Mulch shall be anchored in place with biodegradable netting, not larger than 1/8" by 27" nor smaller than 1/8" by 1/8".
 - The contractor shall be responsible to insure the growth of all seeded areas, and shall re-seed as necessary to accomplish this.
- The Storm Drain Notes and Details Sheet shall be a supplement to WRC Standards and Specifications, which are available on the WRC website (www.wrcpa.com/wrcnet).

STORM DRAIN NOTES AND DETAILS

DESIGNED BY:	DATE:	SCALE:	ONE PUBLISHED WORKS DRIVE, B-200 WEST
DRAWN BY:	DATE:	SCALE:	14675-1000 W-1000
CHECKED BY:	DATE:	SCALE:	4020-1000
APPROVED BY:	DATE:	SCALE:	
DATE:	SCALE:	SCALE:	
SCALE:	SCALE:	SCALE:	
DESIGNED BY:	DATE:	SCALE:	
DRAWN BY:	DATE:	SCALE:	